

Knowledge and Context in Tibetan Medicine

Edited by

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BRILL

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The Modern Biomedical Conception of Cancer and Its Many Potential Correlates in the Tibetan Medical Tradition

Tawni Tidwell

1 Introduction

As a rigorous comprehensive medical system and the primary health care system throughout Tibet and much of the Himalayan world, Tibetan medicine has a long history of addressing the full scope of human disease, including treating debilitating, life-threatening conditions. Over the last several decades, Tibetan medicine has had substantial clinical and research engagement with biomedical collaborations due to greater numbers of patients globally seeking Tibetan medical treatment for cases difficult to treat by biomedicine. Likewise, researchers have demonstrated increased interest in Tibetan medical interventions successfully treating challenging conditions,¹ such as specific types of cancers.²

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- 1 Study examples include: W. J. Brzosko et al., "Influence of Padma 28 and the Thymus Extract on Clinical and Laboratory Parameters of Children with Juvenile Chronic Arthritis," *International Journal of Immunotherapy* 7, no. 3 (1991): 143–47; S. Jankowski et al., "Influence of Padma 28 on the Spontaneous Bactericidal Activity of Blood Serum in Children Suffering from Recurrent Infections of the Respiratory Tract," *Phytotherapy Research* 5, no. 3 (1991): 120–23; R. Korwin-Piotrowska et al., "Experience of Padma 28 in Multiple Sclerosis," *Phytotherapy Research* 6, no. 3 (1992): 133–36; Y. Matzner and S. Sallon, "The Effect of Padma-28, a Traditional Tibetan Herbal Preparation, on Human Neutrophil Function," *Journal of Clinical and Laboratory Immunology* 46, no. 1 (1995): 13–23; Mary Ryan, "Efficacy of the Tibetan Treatment for Arthritis," *Social Science and Medicine* 44, no. 4 (1997): 535–39; W. Split et al., "The Estimation of the Action of Padma-28 in the Treatment of Ischaemic Brain Stroke," *European Journal of Neurology* 5, no. 1 (1998): 9; Tenzin Namdul et al., "Efficacy of Tibetan Medicine as an Adjunct in the Treatment of Type 2 Diabetes," *Diabetes Care* 24, no. 1 (2001): 176–77; Markus Exner et al., "Anti-Inflammatory Mechanisms of the Tibetan Herbal Preparation Padma 28 in the Vessel Wall," *Forschende Komplementärmedizin* 13, no. 1 (2006): 13–17; Fritz Fülleemann, "Padma 28 in the Treatment of Chronic Dental Pulpitis: An Observational Case Study in 49 Patients," *Forschende Komplementärmedizin* 13, no. 1 (2006): 28–30; Jörg Melzer et al., "Treating Intermittent Claudication with Tibetan Medicine

Recent history indicates pressure on Tibetan medical practitioners and scholars to demonstrate science- and biomedical sensibilities in national and international contexts as an effort to establish a specific type of rationality and evidence-based approach for its survival and growth.³ Tibetan medical physician-scholars have provided one-to-one categorical mapping between Euroamerican and Tibetan medical illness categories, influenced by these recent historical pressures, and aiming to garner recognition and legitimacy amidst the broader contemporary biomedical and scientific context in which Tibetan medicine is practiced and in dialogue. However, explanatory models which oversimplify nosologies and etiologies threaten to entangle Tibetan medical paradigms with those of biomedicine, ignoring historical, theoretical, etiological and practical distinctions of each system and how each tradition approaches disease and health. Although both medical systems engage a single body and human experience, each also assesses salient concerns of the body and experience differentially, and therefore applies a different set of diagnostic and treatment modalities to enact healing and wellness. As such, accurate, nuanced, and specific translations for disease categories, concepts and paradigms are becoming increasingly important. Comparisons of Tibetan

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- Padma 28: Does It Work?" *Atherosclerosis* 189, no. 1 (2006): 39–46; H. W. Zhang et al., "Fu xi ting lianhe zhong xiyao zhiliao gaoyuan diqu laonian yiyu zheng de linchuang yanjiu [Clinical Study on Effect of Fluoxetine Combined with Chinese Medicine or Tibetan Drugs in Treating Senile Depression in Plateau District]," *Zhongguo Zhongxiyi jiehe zazhi* [Chinese Journal of Integrated Traditional and Western Medicine] 26, no. 3 (2006): 202–204; Tenzin Choedon et al., "Anticancer and Cytotoxic Properties of the Latex of *Calotropis procera* in a Transgenic Mouse Model of Hepatocellular Carcinoma," *World Journal of Gastroenterology* 12, no. 16 (2006): 2517–22; Rigzin Sangmo et al., "Clinical Trial of Tibetan Medicine in the Treatment of Chronic Hepatitis B," *Journal of Men-Tsee-Khang* 4, no. 1 (2007): 32–49; Cynthia Husted and Lobsang Dhondup, "Tibetan Medical Interpretation of Myelin Lipids and Multiple Sclerosis," *Annals of the New York Academy of Sciences* 1172, no. 1 (2009): 278–96; Lobsang Dhondup and Cynthia Husted, "Tibetan Medicine and Regeneration," *Annals of the New York Academy of Sciences* 1172, no. 1 (2009): 115–22; Tenzin Choedon et al., "Pro-Apoptotic and Anticancer Properties of *Thapring*: A Tibetan Herbal Formulation," *Journal of Ethnopharmacology* 137, no. 1 (2011): 320–26; Cecile Vennos et al., "Clinical Studies on the Efficacy and Safety of Padma 28, a Complex Herbal Formulation from Tibetan Medicine: An Overview," *Complementary Medicine Research* 20, no. 2 (2013): 25–30.
- 2 Susan Bauer-Wu et al., "Tibetan Medicine for Cancer: An Overview and Review of Case Studies," *Integrative Cancer Therapies* 13, no. 6 (2014): 502–12.
 - 3 Vincanne Adams, Renchen Dongzhu, and Phuoc V Le, "Translating Science: The Arura Medical Group at the Frontiers of Medical Research," in *Studies of Medical Pluralism in Tibetan History and Society*, ed. Sienna Craig et al. (Bonn: International Institute for Tibetan and Buddhist Studies, 2010), 111–36; Vincanne Adams, Mona Schrepf, and Sienna R. Craig, eds., *Medicine Between Science and Religion: Explorations on Tibetan Grounds* (New York, NY: Berghahn Books, 2011).

medical categories related to biomedical cancer and other neoplasms, such as *dréné* ('bras nad) and *drétren* ('bras skran) are instructive in that they provide fertile grounds to compare, relate, and distinguish biomedical and Tibetan medical understandings and approaches. Likewise, the severity of disease, the presence of concrete physical morphologies, and the importance of differential diagnostics for effective treatment each reflects an urgency for understanding such distinctions.

This paper provides an hermeneutical and praxis-based comparative analysis of the biomedical conception of cancer into the most proximate Tibetan medical etiological categories. Recent Tibetan medical clinical practice, scholarly work and public forums refer to cancer as *dréné* or *drétren* as a simple shorthand that appeals to the biomedical approach to disease classification. Elucidating a biomedical category like “cancer” indeed facilitates discussion and collaboration with biomedical modes of discourse but must be careful not to privilege a biomedical presentation and thereby diminish Tibetan medicine’s own rigorously sophisticated indigenous nosology as well as occlude critical treatments that outcompete biomedical approaches. This paper analyzes the etiological and diagnostic bases for such a categorical collapse—using the *Four Tantras* (*rgyud bzhi*) as the analytical base with several modern commentarial contributions as clarifying additions, including *The New Dawn Compendium of Medicine* (*gso rig snying bsdus skya rengs gsar pa*) by Samten, one of the first publications to appeal to a biomedical sensibility in its presentation of Tibetan medical categories. I will propose a more complex mapping of biomedical cancer that draws upon the additional categories of *méwel* (*me dbal*), *surya* (*surya*), and other conditions related to “metabolic disruptions of nutritional essence” (*dwangs ma ma zhu ba*), as well as distinguishes non-cancer *dréné* or *drétren*.

This work relies on the author’s experience training in Tibetan medicine and working with contemporary Tibetan medical physicians in Xining and at the Dharamsala Men-Tsee-Khang, where an increasing number of Tibetan physicians are receiving biomedical and science training. The author integrates her own background in biocultural anthropology to develop epistemologic and ontological links between traditions to facilitate clinical research and treatment collaborations between the two traditions. This paper proposes that physicians of the Tibetan medical tradition try to maintain nosological distinctions between medical systems in referring to both general categories and specific conditions so as to retain the etiological paradigms that implicate diagnosis and treatment. The greater aim is to provide the most promising

contributions to treatment of these illnesses, many of which are serious and life-limiting, from the Tibetan medical perspective and acknowledge the epistemological underpinnings that differentiate each tradition. This analysis engages the praxis level—clinical presentations and diagnostics—analyzing practical and therapeutic perspectives, as well as the theoretical level, drawing upon an hermeneutical analysis of the *Four Tantras* and several prominent commentaries relating to diagnostics of *dréné* ('*bras nad*), *tren* (*skran*), *méwel* (*me dbal*), *surya* (*surya*), and related conditions to engage their literal, etiological, and metaphorical significance.

In this paper, I begin with a starting point by describing recent discourse on cancer in Tibetan medicine. Then, I briefly outline the biomedical conception of cancers and neoplasms, followed by distinctions in units of analysis employed in biomedicine compared to those used in the *Four Tantras*. I then present the Tibetan medical understanding of *tren* and *dréné* as described classically in the *Four Tantras* and its commentaries, as a foundation for discussion. I subsequently present the integrative perspective of Menpa Samten, a preeminent Lhasa Men-Tsee-Khang physician of the mid-1980s and 90s. I will proceed to show that, likely due to the historical pressures of scientification constrictions, Samten's work is too narrow to encompass and map the broader scope of all the Euroamerican nosology of biomedical cancers and neoplasms into the Tibetan medical nosology.⁴ I argue that the classical etiological presentations in the *Four Tantras* are sufficient to understand how biomedical cancers map into Tibetan nosology, with the clarifying contribution of Desi Sanggyé Gyatso's *Oral Instructions Supplement* (*man ngag lhan thabs*). I proceed to present the six defining characteristics of biomedical cancer followed by a map of the Tibetan medical conditions and links with an overarching etiological framework, highlighting three illuminating case studies from the biomedical context—skin cancer, leukemia and lymphoma—into the appropriate Tibetan medical context relating to subtypes within *méwel*, *surya*, and metabolic disruptions with abnormal blood proliferation.

4 Of important note, though *The New Dawn* carries his name as sole author, Samten's work is the product of the integrated insights and perspectives of many Tibetan senior physicians in Lhasa at the time (personal communication, Gönpö Kyab [*mgon po skyabs*], Gansu Provincial Tibetan Medical Research Institute [*kan su'u zhing chen bod kyi gso rig zhib 'jug gling*], June 2018).

2 An Historical Starting Point

In the early 1990s, Tibetan physicians formally addressed similar comparisons, such as those at the March 1996 conference at Dharamsala Men-Tsee-Khang,⁵ and through conferences, publications and clinic reorganizations by those in Tibet.⁶ Early discussions of such comparisons did not stem from rigorous analysis of the etiology of each disease and the attending medical epistemologies from which they arose.⁷ Tibetan medical historian Olaf Czaja notes that the biomedical understanding of cancer among Tibetan physicians at the time was limited and thus neither theoretical nor clinical comparisons of diagnostics and treatment could be evaluated. The focal point of comparison was, simply, abnormal growth in the body without characterizing the origins, nature, context, or type of growth; and at times, primarily focusing on the life-threatening aspects of such growths.⁸ As Czaja describes, efforts were focused on a one-to-one correlation between a biomedical disease category on one side and a Tibetan medical disease category on the other side, without recognizing their differential attendant epistemologies and etiologies that define the root of each tradition's fluorescence of conditions, and motivate only rare or even non-existent one-to-one correlations.⁹ Today, we see a greater number of Tibetan physicians training in biomedicine and working alongside biomedical physicians such as at the Qinghai Provincial Tibetan Medical Hospital in Xining as well as various locales throughout Tibet and around the world. They are developing greater recognition of the etiological distinctions between cancer and *dréné*.

5 Olaf Czaja, "The *Four Tantras* and the Global Market: Changing Epistemologies of Drä ('bras) versus Cancer," in *Medicine Between Science and Religion: Explorations on Tibetan Grounds*, ed. Vincanne Adams et al. (New York, Oxford: Berghahn, 2011), 265–95.

6 Khro ru tshe rnam, *Gso rig rgyud bzhi'i 'grel chen drang srong zhal lung* [The Great Commentary on the *Four Tantras*: Oral Instructions of the Sages] (Chengdu: Si khron mi rigs dpe sgrun khang, 2000); Bsam gtan, *Gso rig srying bsdu skya rengs gsar pa* [The New Dawn Compendium of Medicine] (Lhasa: Bod ljongs mi dmangs dpe skrun khang, 2013); Lha mo skyabs, *Bod lugs 'bras nad gso rig* [Tibetan Medical Oncology] (Beijing: Mi rigs dpe skrun khang, 2009); Jam dbyangs bkra shis, *Bod kyi gso ba rig pa'i 'bras nad kyi nad thog rmang gzhi'i rig gzhung dpyad zhib* [Clinical, Basic Research, and Literature Analysis of Cancer (*Dréné*) in Tibetan Medicine] (Lhasa: Doctoral Dissertation at the Tibet University of Tibetan Medicine, 2015). Döntsé personal communications 2013, 2015.

7 As Czaja notes, "[I]n the case of cancer, Tibetan doctors hotly debated and thus were less self-assured about the identification of this 'modern' disease with their own traditional categories and aetiologies" (Czaja, "The *Four Tantras* and the Global Market," 272).

8 See, for instance, Lha mo skyabs, *Bod lugs 'bras nad gso rig*.

9 Czaja, "The *Four Tantras* and the Global Market," 273, 280.

In the general discourse in the Tibetan medical field, there is widespread acceptance that cancer and *dréné* are not identical forms of disease,¹⁰ but the practical use of *drétren* and *dréné* as a short form for cancer is common.¹¹ After the attempt to clarify critical points from the 1996 Dharamsala Men-Tsee-Khang conference, many Tibetan medical scholars outside of Tibet have used the English transliteration *kensar* (*kan sar*) to differentiate biomedical conceptions of cancer from *drétren* and *dréné*.¹² Yet there still exists continued conflation of the terms in important works later on. For instance, despite expressing concern about using the term *dréné* synonymously for cancer in the conference, Menpa Dorje Rabten Neshar still uses the term *dréné* to refer to the cases in his cancer studies where patients were recruited after having a definitive biomedical diagnosis of cancer, and gives little description of the Tibetan medical diagnostics.¹³ Understandably such records were developed to demonstrate effective treatment of biomedical cancer to a scientific and non-specialist audience and were not focused on demonstrating the Tibetan medical diagnostic categories or methods; however, such a convention set precedent for this slippage of a one-to-one correlation of cancer and *dréné*. Likewise, among Tibetan doctors in Tibet, there is the frequent synonymous use of *dréné* and the Chinese term for biomedical cancer (*aizheng* 癌症), as well as the use of *drétren* to describe malignant forms of tumors. This is demonstrated by the newly developed “Cancer-Tumor Department” (*bras skran tshan khag*), established in 2014 at Qinghai Provincial Tibetan Medical Hospital in Xining, and the conferences organized along with its inception to generate greater scholarship, understanding, and standardized treatment approaches around these categories and related diagnostics and treatments.¹⁴

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- 10 Dorjee Rabten Neshar, “Clinical Case Study of Cancer (*Dres-Ned*) Patients Treated at Men-Tsee-Khang’s Bangalore Branch Clinic for the Period of 27 Months from November 2002 to February 2005,” *sMan-rTsis Journal: Journal of Tibetan Medicine and Astrological Sciences* 4, no. 1 (2007): 50–68; Döntsé, personal communication, 2014; Namlhakhar, personal communication, 2014.
- 11 See, for instance, ‘Jam dbyangs bkra shis, *Bod kyi gso ba rig pa’i ’bras nad kyi nad thog rmang gzhi’i rig gzhung dpyad zhib*; and Lde’u rong jo skyabs tshe ring, *Bod kyi gso rig las ’bras nad skor gyi dpyod gling*.
- 12 Even within Tibet, the English term has been inserted without attempt to translate. See, for instance, Dho lha, *Mchìn pa’i Cancer la bod lugs gso rig gis brtag bcos zhib ’jug*.
- 13 Rabten Neshar, “Clinical Case Study of Cancer (*Dres-Ned*) Patients.”
- 14 Through the course of developing my Tibetan medical graduating thesis (written and presented in Tibetan) and presenting its contents at Sorig Loling in June 2015 and the August 2017 conference in Lhasa commemorating the 100th Anniversary of the founding of Lhasa Men-Tsee-Khang, it generated much discussion among Tibetan physicians. Few disagreed with the content, but many remarked on its “new” approach of mapping one condition onto many in the Tibetan medical nosology and so forth. Perhaps the discussion

However, this synonymy is not apparent from, for example, recitations and studies of the *Four Tantras* and its various commentaries. Likewise, the distinctions between more aggressive and mild forms seem to form a gradient across both *dréné* and *tren* categories, as well as expand across other candidates of disease categories in the *Four Tantras*. These illness types seem to pose possible links to biomedical categories of cancer but are not identical due to many non-cancer diseases subsumed within these illness categories and etiologies, and many cancer subtypes mapping more effectively into other Tibetan medical illness categories with distinct etiologies.

In the next section, I briefly outline contemporary biomedical conceptions of tumors and cancers.

3 Biomedical Tumors and Cancer as Neoplasms

In biomedicine, the term “neoplasm” (literally, “new growth”) refers to a group of cells that undergo abnormal, unregulated growth and form a mass or distribute diffusely in the body. When this abnormal growth of cells accumulates as a mass, it is referred to as a tumor.¹⁵ All tumors are neoplasms.¹⁶ Neoplasms can be either benign or malignant. Benign tumors remain confined to their original location enclosed in a fibrous capsule that neither invades surrounding tissues nor spreads to other body sites. A skin wart would even be considered a benign neoplasm. Malignant neoplasms have the capacity to both invade adjacent cells and tissues as well as spread to other tissues and organs. When a neoplasm is malignant, it is referred to as cancer. All cancers are malignant neoplasms. Both malignant and benign neoplasms are classified according to the type of cell and tissue from which they arise. Malignant tumors are

illuminated an inherent assumption among Tibetan physicians that in discussions with biomedical physicians and scientists they needed to demonstrate one-to-one categorical semblance with biomedical illness categories. In late fall 2014, the Cancer-Tumor Department invited specialists from all over Kham and Amdo to discuss *dréné* and *tren*, and how to understand cancer from the Tibetan medical perspective, including the various related conditions, diagnostics, and treatments. This was an invite-only private conference of about a dozen attendees. A close mentor and attendee of the conference, Gen Döntsé, recently appointed head doctor of the outpatient division of the Cancer-Tumor Department, said there was very little consensus among physicians or concrete directives of diagnostics or treatment developed (Döntsé, personal communication, 2014).

15 Geoffrey M. Cooper, *Elements of Human Cancer* (Boston, MA: Jones and Bartlett Publishers, 1992), 16.

16 Solid neoplasms are called tumors, masses, neoplastic cells, or neoplasia.

divided into four types: carcinomas, sarcomas, leukemias and lymphomas, and neuroectodermal tumors.

Carcinomas comprise 90 percent of all human cancers.¹⁷ They arise from superficial cell layers called epithelial cells of the gastrointestinal tract, including the mouth, esophagus, and small and large intestines. They also include those of the skin, mammary glands, pancreas, lungs, liver, ovaries, gallbladder and urinary bladder.¹⁸ There are two major biological functions of the epithelia that distinguish the two major categories of carcinomas that form from them: epithelial cells that form protective cell layers are called squamous cell carcinomas, and epithelial cells that secrete substances into the ducts or cavities they line are called adenocarcinomas.¹⁹

Malignant tumors that arise from nonepithelial tissues throughout the body derive from connective tissues, such as mesenchymal cells, and are called sarcomas. They comprise only about one percent of tumors. Mesenchymal cells differentiate into various functions such as those that support tendons and skin;²⁰ store fat;²¹ form bone;²² and comprise muscles.²³

The second type of nonepithelial cancers stem from various blood-forming tissues and are thus called hematopoietic, literally meaning “to make blood.”²⁴ These include cells of the immune system.²⁵ Leukemia (literally, “white blood”) refers to disorders of white blood cells known as leukocytes, in which the hematopoietic cell lineages have become malignant. Unlike normal red blood cells, leukocytes are unpigmented and thus white in color. They do not coalesce into solid tumors, and instead move freely through circulation. This will be an important point in the comparison with both *dréné* and *tren* in the *Four Tantras* due to the latter’s solid morphological characteristics as disease types. Lymphomas derive from two types of lymphocytes called B and T lymphocytes, collectively called lymphoid lineages, which are responsible for primary adaptive immune response in the body, recognizing indicators of potentially harm-

17 Cooper, *Elements of Human Cancer*, 17.

18 Robert A. Weinberg, *The Biology of Cancer* (New York, NY: Garland Science, 2006), 29.

19 Weinberg, *The Biology of Cancer*, 30.

20 Fibroblasts secrete collagen to support tendons and skin.

21 Adipocytes store fat in their cytoplasm.

22 Osteoblasts assemble calcium phosphate in their collagen matrices.

23 Myocytes form muscles.

24 From “blood” (Grk. αἷμα) and “to make” (Grk. ποιεῖν). See Henry George Liddell and Robert Scott, *Liddell and Scott’s Greek-English Lexicon* (London: Simon Wallenberg Press, 2007).

25 Like those destined to become erythrocytes (red blood cells), antibody-secreting (plasma) cells, and T and B lymphocytes (Weinberg, *The Biology of Cancer*, 32). See for instance Tristram G. Parslow et al., *Medical Immunology* (New York, NY: McGraw-Hill/Appleton and Lange, 2001).

ful foreign substances in the body called antigens. Disruptions to lymphocyte development and growth produce cells which aggregate to form solid tumor masses most often found in the lymph nodes, but also can be found dispersed as single-cell populations similar to leukemia.

The third and last major type of nonepithelial tumors derives from the central and peripheral nervous system and are called neuroectodermal tumors named after the cells from which they arise.²⁶ They comprise 1.3 percent of all diagnosed cancers but are responsible for double the number of deaths.²⁷

Some unique types of cancers do not fit into the four categories (one epithelial, and three nonepithelial) described above, like those arising from specialized skin and eye retinal cells (melanomas), as well as specific cells in the lungs similar to those found in the adrenal glands of the kidneys.²⁸ These cells and related malignancies are unique in that they can switch their cell type and lineage demonstrating the cell plasticity that allows some carcinoma cells to invade adjacent normal tissues.²⁹ This will be relevant in the comparison with *dréné*, *méwel*, and *surya* etiology and the related Tibetan medical illnesses below.

4 Distinction in Units of Analysis: Cells and Tissues versus Bodily Constituents

Before discussing how the Tibetan medical perspective understands uncontrolled abnormal growths in the body that invade adjacent normal body regions and cause associated dysfunction, it is important to note a distinction on the primary unit of analysis in each tradition. When analyzing disease formation in Euroamerican medicine, the cell is a primary unit of analysis, along with a group of morphologically similar cells that interact to perform specific

26 For example, neuroectodermal tumors include gliomas, glioblastomas, neuroblastomas, schwannomas, and medulloblastomas.

27 Cooper, *Elements of Human Cancer*, 17.

28 These include melanomas and small-cell lung carcinomas (SCLCs). Melanomas derive from melanocytes, pigmented cells in the skin and retina. SCLCs have cells with attributes of neurosecretory cells like those in the neural crest of the adrenal glands above the kidneys.

29 These tumors likely originate in epithelial cells then switch their tissue lineage to those of a neuroectodermal lineage. This transition is called an epithelial-mesenchymal transition (EMT) and is the demonstrative characteristic of cell plasticity which enables some carcinoma cells to invade adjacent normal tissues (J. P. Thiery and J. P. Sleeman, "Complex Networks Orchestrate Epithelial-mesenchymal Transitions," *Nature Reviews Molecular Cell Biology* 7 [2006]: 131–42).

functions of the body.³⁰ Such a group of cells is called a tissue.³¹ Biomedicine looks at how specific cells differentiate from the initial cells of life, further differentiate into specialized cells in utero, and, likewise, continually engage in such recapitulated morphological and functional processes throughout the life course. In Tibetan medicine, a primary unit of analysis in describing disease formation is the seven bodily constituents—that is, nutritional essence, blood, muscle, fat, bone, bone marrow, and regenerative fluid; the excrements, such as urine, feces, perspiration, as well as many others; and the vital, vessel, and sensory organs. In the *Four Tantras* and its commentaries, it is important to note that bodily constituents and the other units of analysis are defined by their function, and less by morphology. Likewise, for example, the bodily constituents are described according to how they develop in utero and how they differentiate from each other to form their specialized functions, similar to that of cells and tissues from the biomedical perspective. Thus, when comparing abnormal growth, in biomedicine, we refer to cells and tissues, and in Tibetan medicine we refer to bodily constituents, the vital, vessel, and sensory organs they comprise, and the effects on the excrements they exude.³²

Furthermore, Euroamerican medicine delineates specific systems of body functions such as the nervous, circulatory, muscular, and reproductive systems with associated organs, pathways, fluids, metabolites, and so forth. Such systems are functional when in homeostasis or moving to new norms in heterostasis, yet can experience dysfunction and result in disease. Likewise, in Tibetan medicine, there are three main systems of body referred to as *nyépa* (*nyes pa*).³³

30 As with histopathology, which analyzes microscopic changes in cells and tissues that indicate disease and abnormalities.

31 Sylvia Mader and Michael Windelspecht, *Human Biology* (New York, NY: McGraw-Hill Education, 2015), 44.

32 New initiatives in Tibetan medicine and across Buddhism have developed the terminology for cell, tissue and a vast number of scientific terms in biology, chemistry, physics, neuroscience, and the philosophy of science, in order to facilitate dialogue, generate greater understanding of science in the Tibetan fields of knowledge and across Tibetan society, and assist the traditions in mutual contributions of epistemologies, ontologies, and knowledge of body, mind, and the natural world (see, for instance, Emory-Tibet Science Initiative and its associated publications and projects). Thus, we are seeing increasing integrative perspectives of Tibetan medical understandings applied to contemporary delineations of body systems and units (e.g., cholesterol), and biomedical understandings contributing to Tibetan medical paradigms as well.

33 The three *nyépa* have experienced many approaches to their translation due to their multivalent meanings and applied use (Yonten Gyatso, “*Nyes pa*: A Brief Review of its English Translation,” *The Tibet Journal* 4 (2005–2006): 109–18; Barbara Gerke, “Correlating Biomedical and Tibetan Medical Terms in *Amchi* Medical Practice,” in *Medicine Between Science and Religion*, ed. V. Adams et al. [New York, NY: Berghahn Books, 2010], 127–52).

These are default functional energetic systems of pathways or activities that, in their default mode, link body constituent, organ, fluid, and energetic signaling dynamics to provide specific systemic functions in the body.

These three systems—known in Tibetan as *rlung* (*rlung*),³⁴ *tripa* (*mkhris pa*) and *béken* (*bad kan*)—have a vast number of functions, but, in short, relate to the functional dynamics and activities of motility, heat, and solidity/cohesion, respectively, in the body.³⁵ To retain the complexity of the original Tibetan terms, I will not translate them beyond these adjectival approximations, but will expand briefly on their functions for greater understanding of each system. The *rlung* system manages all motility in the body, similar to the neuroendocrine system in biomedicine.

Rlung controls respiration, swallowing, and articulation; physical, verbal and mental movement; exertion; sensory organ perceptual acuity; metabolic separation of nutrient and waste products and digestive waste elimination as well as similar downward-voiding activities of the uterus, urinary system, colorectal region, and so forth. *Rlung* also encompasses many other functions related to motility and signal-response in the body. The bodily constituents, organs, and sensory organs related to *rlung* pathways include bone, heart, colon, hearing and tactile sensory organs, colon, and the pathways supporting life (*srog*).

Tripa is related to the heat-producing functions in the body. It is responsible for thermoregulation, metabolic power and heat in digestion, cardiovascular functions, heart and blood constituents and activities, hunger and thirst, liver and gallbladder function, complexion and skin maintenance, and sharpness

See Gerke, “Correlating Biomedical and Tibetan Medical Terms,” for an expanded discussion on the challenges of translating Tibetan medical terms into English; and see Czaja (“The Administration of Tibetan Precious Pills,” *Asian Medicine* 10, nos. 1–2 [2015]: 36–89) for examples of some of the tensions. To retain a more literate translation of the term, since the Tibetan term refers to their activity as the primary instigators of disease and imbalance in the body, like a weakness that befalls the Achilles heel and results in systemic debilitation, Yonten Gyatso aptly translates them as “defaults” (“*Nyes pa*,” 109–18). This article follows Gyatso’s lead in partially using the translation terminology “default” for this term (*nyes pa*). Although the functional form is formally termed the three *duwa* (*’du ba*), the functional and pathological forms of *duwa* and *nyépa* are often both referred to as *nyépa* throughout the *Four Tantras* with context determining the version to which the term is referring. For related discussion, see Henk Blezer, “A New Sense of (Dark) Humor in Tibet: Brown Phlegm and Black Bile,” this volume.

34 Although the standard phonetic conversion (Germano and Tournadre 2010) for *rlung* is “lung” (pronounced *lōōng*, meaning “winds;”), I retain the Wylie spelling “*rlung*” to distinguish the term and prevent confusion with the organ lung.

35 These are known as the elemental dynamics of wind, fire, and water and earth (*rlung/me/sa dang chu*), respectively. Here, I choose to use the adjective forms in translating the terms to facilitate a better recognition of how they are understood by the tradition and employed in a medical context.

of cognitive and intellectual processing. Its pathways relate to the blood, liver, gallbladder, small intestine, visual sensory organs, and perspiration.

Béken is related to solidity and cohesion in the body, namely, providing support for the body and mind; promoting physical and mental patience, tolerance, and imperturbability; facilitating sleep; producing connectivity in the joints; and smoothing and oiling functions of all organs, constituents, and fluids in the body. Its pathways relate to the nutritional essence, muscle, fat, bone marrow, regenerative fluid, feces, urine, olfactory and gustatory sensory organs, lungs, spleen, stomach, kidneys, and urinary bladder, as well as many of the other fluids and oils in the body.

In addition to their vast and diverse functions, these three systems can also incur innumerable imbalances and dysfunctions. I will refer to these three materio-energetic systems coordinating body constituent and organ functions as the “three default systems,” or “defaults,” for short. Imbalances and dysfunctions, such as disturbances, can refer to metabolic disruptions such as in *tripa* functions and pathways; disturbances in lymph and serum metabolites as with *béken*; neuroendocrine signaling dysfunction as in *rlung* pathways; and the associated improper bodily constituent development, activities, and pathways as well.

In the next section, I describe the understanding of *tren* and *dréné* as described classically in the *Four Tantras*, as well as several elaborations and additions in its commentaries.

5 *Tren* as Abnormal Growths and Accretions

Tren are defined as any abnormal mass formed in the body.³⁶ The definition for neoplasms in biomedicine demonstrates large similarity to many *tren* described in the *Four Tantras*. For example, of the various types of *tren* described in the *Four Tantras*, many are abnormal growths that arise from the bodily constituents. These kind of *tren* include: esophagogastric *tren* (*lhen skran*), masses in the uterus (*mngal skran*), *tren* developed in *rlung*-associated regions (*rlung skran*), channel *tren* in blood and lymph vessels and neural pathways (*rtsa skran*), *tren* related to blood formation processes and organs (*khrag skran*), and

36 Byams pa 'phrin las, ed., *Bod lugs gso rig tshig mdzod chen mo* [Great Tibetan Medical Dictionary] (Lhasa: Mi rigs dpe skrun khang, 2006), 44: “The name of a disorder in which hard, dense accreted masses form either by metabolic disruptions from waste products or nutritional essence of ingested materials” (*kha zas kyi snyigs ma ma zhu ba'am dwangs ma ma zhu ba las gyur pa'i lus kyi phyi nang gang rung du 'byung ba'i dbyibs gong bur 'dril la ngo bo sra mkhregs can gyi nad kyi ming ngo/*).

tren due to microorganisms (*srin skran*),³⁷ which can form in the liver, gallbladder, spleen, gut, colon, small intestine, and so forth, with differing prevalence and characteristics in each region. However, *tren* also include any abnormal mass formed from that which the body ingests that slowly accretes and hardens. Examples of these *tren* include: gallstones (*mkhris skran*), literally stone accumulations of the gallbladder (*mkhris pa'i rdo skran*); kidney stones (*mkhal ma'i rde'u skran*); and bezoars (*lhen skran*, *pho skran*) or gut boluses of indigestible material such as those that form from cellulose and other indigestible plant material, fruit pits, dense and sticking gum-like substances, or hair (*spu skran*). Clearly, those *tren* that arise primarily from abnormal growths and accumulations of the body constituents relate to the biomedical conception of neoplasm. Whereas those *tren* which form from that which the body ingests, relate to the biomedical conception of lithiasis—calculi, concretions, and calcifications.³⁸

In the *Four Tantras*, abscesses also are part of the *tren* category,³⁹ as fluid-filled *tren*, also known as pus *tren* (*rnag skran*), fluid *tren* (*chu skran*), or *chuser*-filled *tren*.⁴⁰ *Chuser* (*chu ser*), which literally translates as “yellow fluid,” is

37 Regarding *srin* (*srin*), see Byams pa 'phrin las, *Bod lugs gso rig tshig mdzod chen mo*, 955: “The 84,000 *sinbu* that reside as coemergent in the body and, in a balanced state, provide strength and radiance to the body and one's longevity as well as protect one's vitality and sensory organs. They accompany one's projection of dexterity. In imbalance, they produce diseases of various types” (*lus la lhan skeyes su gnas pa'i srin bu brgyad khri bzhi stong la bya ste/ de dag rnam par ma gyur pa'i tshes lus kyi stobs mdangs bskyed cing/ tshes srog dbang po srung ba dang/ yang rtsal dod pa sogs kyi grogs byed pa dang/ rnam par gyur na nad rigs rnam pa sna tshogs skeyed par byed pa'i las can no/*). On *Sinbū* (*srin bu*, *srin 'bu*), see Byams pa 'phrin las, *Bod lugs gso rig tshig mdzod chen mo*, 956: “A term for the coemergently existent and minutely small internal and external organisms that cause *srin* disease when disturbed. In terms of classification by type, there are those that collect in heaps, *rlung*-related that are elongated, *tripa*-related that are body hair- and needle point-like. Classified by location, there are those of lice and its eggs, eyes, teeth, skin, rectum, and genitalia, which are traditionally classified” (*lus la lhan skeyes su mchis shing 'khrugs na srin nad du gyur ba'i phyi nang gi srin bu'am 'bu srin phra mo rnam kyi ming ste/ 'di la'ang rigs kyi sgo nas dbye na bad srin dru bu sdog pa 'dra ba dang/ rlung srin thur ma 'dra ba/ mkhris srin sha spu'am khab rtse 'dra ba/ gnas kyi sgo nas dbye na shig sro dang/ mig srin/ so srin/ pags srin/ gzhang srin/ mtshan ma'i srin bcas dbye srol mchis so/*).

38 Calculi are abnormal concretions, usually composed of mineral salts, which occur throughout the body most often in hollow organs and their passages. They are also called stones and suffixed by *-lith* (e.g., a bronchololith is a pulmonary calculus; see J. M. Longmore, *Oxford Handbook of Clinical Medicine* [Oxford: Oxford University Press, 2010]).

39 G.yu thog yon tan mgon po, *Bdud rtsi snying po yan lag brgyad pa gsang ba man ngag gi rgyud* [The Secret Quintessential Instructions on the Eight Branches of the Ambrosia Essence Tantra] (New Delhi: Men-Tsee-Khang, 2008), 174–77.

40 At other times fluid-like pockets or eruptions known as *shuwa* (*shu ba*), a term also used to refer to blisters, scabs, abscesses, and some sores.

somewhat similar to the term “serous fluid” in biomedicine, except that *chuser* it encompasses a greater scope of the fluid types, processes, and metabolisms across bodily constituents and compartments throughout the body. *Chuser* is a composite term for the fluid that comprises intra- and extracellular fluid, interstitial fluid, pre-lymph fluid, blood serum, cerebrospinal fluid, and so forth. The metabolisms of these fluids across various body cavities, vessels, and spaces are seen to be one process that has its own metabolism, and which can undergo disturbances in how the fluids perfuse tissues, integrate nutrients, expel waste products, and so forth—all under the heading of *chuser* functions, pathways, and activities. In biomedicine, a fluid-filled neoplasm is often called a cyst, but an abscess is designated as a cavity caused by tissue damage that often fills with fluid or pus. Abscesses are technically not neoplasms unless the cells subsequently undergo abnormal growth.

Like the biomedical definition that abscesses are fluid-filled cavities that develop from tissue damage, fluid *tren* most often form from damage to the bodily constituents. *Chuser tren* often form secondary to primary *tren* due to damage incurred by *tren*-formation processes, and related *chuser* metabolism. The contrasting conceptions of neoplasms as abnormal cell growth in biomedicine compared to that of *tren* as abnormal mass formation in bodily constituents, excrements, and ingested material in the *Four Tantras* highlights the distinction between the two categories of neoplasm and *tren*.⁴¹

6 Dréné Etiology: a Subtype of Coemergent “Wounds”

In the *Four Tantras*, *dréné* is classified as a type of wound (*rma*), defined as damage to the skin or flesh level.⁴² Such wounds can occur internally or externally, in or on specific organs or bodily constituents.⁴³ The *Four Tantras* broadly

41 Likewise, due to the pervasiveness of influences contributing to the development of *tren* in the body, and its relationship to long, slow temporal processes, the *Four Tantras* describe *tren* as one of the great chronic disorders (*gcong chen skran*). See G.yu thog yon tan mgon po, *Bdud rtsi snying po yan lag bryad pa gsang ba man ngag gi rgyud*, 174. In biomedical diagnostics, the coarse appearance of some abscesses is often difficult to distinguish from neoplasms showing an ontological nuance in the categorical delineations (S. A. Klotz and R. L. Penn, “Clinical Differentiation of Abscess from Neoplasm in Newly Diagnosed Space-Occupying Lesions of the Liver,” *Southern Medical Journal* 80, no. 12 [1987]: 1537–41).

42 G.yu thog yon tan mgon po, *Bdud rtsi snying po yan lag bryad pa gsang ba man ngag gi rgyud*, 462: *‘dzag pa dri nga tshor ba sdug bsngal bcas/ lus las ‘phral du nyams shing rma ba la/ pags pa sha gdan ral phyir rma zhes bya/*.

43 G.yu thog yon tan mgon po, *Bdud rtsi snying po yan lag bryad pa gsang ba man ngag gi rgyud*, 400.

subdivides “Wounds” into two major categories: “Coemergent Wounds” (*lhan skyes rma*) and “Incidental Wounds” (*glo bur rma*).⁴⁴ *Dréné* is a type of disease in the “Coemergent Wound” (*lhan skyes rma*) category.⁴⁵

“Coemergent Wounds” are defined as “wounds that arise, not from an external source such as that of a knife, weapon, impaling object, or projectile, but spontaneously co-arise from an internal disturbance in the three default systems.”⁴⁶ In the *Four Tantras*, “Coemergent Wounds” comprise eight diseases: *dréne*, hemorrhoids, burn-like irritations (*méwel*), sunburst-shaped irritations/ulcers (*surya*), lymph disorders, testicular swelling, leg-swelling disorders (*kangbam*) like varicose veins, perineal fistulas, and other internal ulcers, irritations, and tears. *Méwel*, *surya*, and lymph disorders will be further explained shortly as they become important when we look at all the candidate Tibetan medical conditions onto which biomedical neoplasms and, specifically, cancers map. “Incidental Wounds” (that is, external trauma-related wounds) include all acute types and locations of injuries—flays and lacerations (*bshus*), incisions (*bshags*), cuts (*bcad*), avulsions and cleavages (*rnam par bcad*), partial avulsions and dismemberments (*rab tu 'phyang ba*), fall injuries (*lhung*), breaks and fractures (*grums*), punctures and penetrations (*phug pa*)—and three location classes of the injury—head and neck, chest and abdomen, and limbs.⁴⁷

Etiologically in the *Four Tantras*, *dréné* initially arises from damage to a bodily constituent in the form of a wound due to “trauma, disturbance, or metabolic un-ripening” of nutrient essences propagated to each of the bodily constituents.⁴⁸ Consequently, poor blood quality develops, and the winding coalescing processes of eddies in the flow of aggravated *rlung*⁴⁹ forms a growth in the region qualifying it as a *dré*, literally meaning “fruiting mass.” As with other illnesses in the *Four Tantras*, the causes of a disease provide the “initial conditions” from which a disease gains the potential to arise. However, it is the compounding conditions that provide the driving influences for the

44 G.yu thog yon tan mgon po, *Bdud rtsi snying po yan lag brgyad pa gsang ba man ngag gi rgyud*, 462.

45 G.yu thog yon tan mgon po, *Bdud rtsi snying po yan lag brgyad pa gsang ba man ngag gi rgyud*, 400–13.

46 Byams pa 'phrin las, *Bod lugs gso rig tshig mdzod chen mo*, 1007: *phyi'i mda' rdo dang gri mtshon sogs phog pa las byung ba ma yin par nang gi 'du ba 'khrugs pa'i nad dang lhan cig tu skyes pa'i rang bzhin du byung ba'i rma'i ming /*.

47 G.yu thog yon tan mgon po, *Bdud rtsi snying po yan lag brgyad pa gsang ba man ngag gi rgyud*, 462.

48 G.yu thog yon tan mgon po, *Bdud rtsi snying po yan lag brgyad pa gsang ba man ngag gi rgyud*, 400: *rgyu ni 'grams 'khrugs kha zas ma smin pa/*.

49 G.yu thog yon tan mgon po, *Bdud rtsi snying po yan lag brgyad pa gsang ba man ngag gi rgyud*, 400: *ngan khrag rgyas te rlung gis bsgril nas 'byung/*.

manifestation of actual disease. The four compounding conditions (*rkyen bzhi*) the *Four Tantras* identifies that precipitate imbalance and disease comprise: seasonality and place, non-human external factors,⁵⁰ diet, and lifestyle (*dus gdon zas spyod*). I will provide a brief introduction to the “causes” (*rgyu*) of *dréné* below, which provide the foundation for disease development. However, it is important to keep in mind these compounding conditions, or “conditions” in short, that apply to each cause, provide the inciting influences that drive disease initiation and progression.

6.1 “Trauma” as a Cause

“Trauma” (*'grams pa*) refers to pervasion, impact, injury, or harm. It indicates trauma or injury to a bodily constituent or organ.⁵¹ Since *dréné* is considered a type of wound in the *Four Tantras*, this cause is further understood by the overarching understanding of wounds as trauma to the skin (*pags pa*) and muscle layers (*sha*) in the *Four Tantras*. For example, Jampa Trinlé's (1928–2011) edited work, the *Great Tibetan Medical Dictionary* (*bod lugs gso rig tshig mdzod chen mo*), describes this impact on the skin constituent (*pags la gram pa*) as “the spreading or dispersion across the skin,”⁵² which has a clinical presentation on the superficial and sub-dermal regions as irritations and local damage such as rash, pustules, pox, wounds, bruising, and so forth.

6.2 “Disturbance” as a Cause

“Disturbance” (*'khrugs pa*) refers to a disturbance in the function, pathways, and related constituents of the three default systems. The *Four Tantras* describes a disturbance as an influence that stems from the four conditions in which one of these conditions adversely affects one or more of the respective defaults causing proliferation, deficiency, or disturbance in the flow and function of the defaults.⁵³ For example, the natural light (*yang ba*) and rough (*rtsub*

50 This condition known as *dön* (*gdon*) has wide and diverse connotations: on one side they are described as evil spirits and on the other side they are harmful environmental influences that cause a range of mental, skin, and serous fluid (*chu ser*) disorders. Many of the other disorders in the Tibetan medical nosology can be caused or influenced by *dön* as well, though presenting with the same symptomology as other causes.

51 Byams pa 'phrin las, *Bod lugs gso rig tshig mdzod chen mo*, 135.

52 Byams pa 'phrin las, *Bod lugs gso rig tshig mdzod chen mo*, 446: *pags la gram pa / pags pa'i steng du khyab pa'am 'thor ba'i don*.

53 G.yu thog yon tan mgon po, *Bdud rtsi snying po yan lag brygad pa gsang ba man ngag gi rgyud las rtsa ba'i rgyud bshad pa'i rgyud phyi ma'i rgyud kha skong dang bcas pa* [Root Tantra, Explanatory Tantra, and Subsequent Tantra from the Secret Quintessential Instructions on the Eight Branches of the Ambrosia Essence Tantra] (New Delhi: Men-Tsee-Khang, 1999), 73–77.

pa) qualities of early summer (*so ga*) that relate to similar qualities in the environment, one's body, and dietary and lifestyle behaviors cause *rlung* to accumulate in the body.⁵⁴ Because there is an accompanying warmth of the season, *rlung* does not proliferate. However, due to the moist cold qualities produced by the summer monsoon season, *rlung* proliferates in the midsummer and an increase in *rlung* disorders is common. According to the *Four Tantras*, the fall season has more oily and warm qualities which cause such *rlung* imbalances to naturally subside.⁵⁵ However, an excessively dry, rough and cool fall will cause the *rlung* to continue to proliferate and thus, fully manifested *rlung* conditions will result.

In the same way, dietary and lifestyle conditions can cause underlying imbalances to manifest. When a default system moves from its own default region to that of another system's default region, it is referred to as a "disturbance," and symptoms will manifest in that region characteristic of both the region and the penetrating default system.

6.3 "Unripened Constituents" as Cause

Improper metabolic ripening of the bodily constituents refers to the inability of the digestive system to properly identify nutrient (*dwangs ma*) from waste (*snyigs ma*). According to the *Four Tantras*, fire-accompanying *rlung* (*me mnyam rlung*) is responsible for this differentiation of nutrient and waste. When fire-accompanying *rlung* does not function properly, there is separation error in the identification and differentiation of nutrient and waste. Improper differentiation leads to waste product falling into the nutrient pathways that normally carry nutritional essence from ingested dietary content to properly build, develop, and maintain all the bodily constituents. When waste product enters the nutrient stream, radiance-transforming *tripa* (*mdwangs sgyur mkhris pa*) cannot properly produce normal healthy blood; that is, this subtype of *tripa* cannot properly "ripen" the blood (*zung khrag ma smin pa*), and consequently that blood cannot develop the other bodily constituents as needed. When this improper blood resides for long durations in the liver, the patient develops a "metabolic disruption of the nutritional essence" (*dwangs ma ma zhu ba*) condition.

54 This is due to exacerbating the natural qualities (i.e., defining characteristics) of *rlung*. See G.yu thog yon tan mgon po, *Rtsa ba'i rgyud bshad pa'i rgyud phyi ma'i rgyud kha skong dang bcas pa*, 60: *rlung gi mtshan nyid rtsub cing yang ba dang/ grang zhing phra la sra zhing g.yo ba yin/*.

55 G.yu thog yon tan mgon po, *Rtsa ba'i rgyud bshad pa'i rgyud phyi ma'i rgyud kha skong dang bcas pa*, 75.

6.4 *Inciting Causal Factors: Impure Blood Proliferation and *rlung* Aggravation*

In the *Four Tantras*, what makes *dréné* distinct from *tren* is the coincident causal factor⁵⁶ that ultimately forms a *dré*. This is the excess production of poor quality (or impure) blood and the intensity of a coalescing force of aggravated *rlung*.⁵⁷ The *Four Tantras* describes the full etiology of *dréné* as: “Due to trauma, disturbance, or metabolic un-ripening, bad blood proliferates and *rlung* condenses [the constituents] to form [*dréné*].”⁵⁸ Thus from the generation of diseased blood and the compounding factor of *rlung* condensing the involved constituents, masses coalesce in the body like a gnarl on a tree, hence the name *dréné*, where *dré* is a growth, like a whorled growth on an oak or an edible fruit.

Dréné are further classified according to type in terms of etiological distinctions of the primary default system imbalance driving their formation—*rlung*, *tripa*, blood, and *béken*, where blood here, similar as for other illnesses described in the *Four Tantras*, is technically a bodily constituent but treated similar to an additional default system etiologically.⁵⁹ Type classifications in the text also include an etiology linked to damage caused by a weapon (*mtshon*) and that which has morphological characteristics like a bird egg (*bye 'dras*). *Dréné* are also classified in the *Four Tantras* according to “external” and “internal” location, where, “external” refers to more anatomically superficial layers of the constituent from which the *dré* grows, namely, muscle, bone, and blood, as well as lymph and neural channels.⁶⁰ “Internal” locations refer to more anatomically deep regions and aspects of organs described where the

56 Subsequent to the three causes setting the initial causal conditions.

57 G.yu thog yon tan mgon po, *Bdud rtsi snying po yan lag brgyad pa gsang ba man ngag gi rgyud*, 400.

58 G.yu thog yon tan mgon po, *Bdud rtsi snying po yan lag brgyad pa gsang ba man ngag gi rgyud*, 400: rgyu ni 'grams 'khrugs kha zas ma smin pa/ ngan khrag rgyas te rlung gis bsgril nas 'byung/.

59 Blood (*khrag*), as well as *chuser* (*chu ser*) and microorganisms (*srin*), as intermittently treated similar to additional default systems, require more space than the scope of this paper to address and so will be left unexplained for now. For now, note that the gloss of type classifications provided for *dréné* in the *Four Tantras* explicitly contextualizes them like default system types (G.yu thog yon tan mgon po, *Bdud rtsi snying po yan lag brgyad pa gsang ba man ngag gi rgyud*, 400: nyes pa'i rigs kyi dbye/).

60 G.yu thog yon tan mgon po, *Bdud rtsi snying po yan lag brgyad pa gsang ba man ngag gi rgyud*, 400.

dré grows, namely, lung, heart, liver, spleen, kidney, stomach, large and small intestines, rectum, and urinary bladder.⁶¹

Interestingly, in the *Four Tantras* lymph gland *dré* (*'bras rme*)⁶² are not placed as one of the locations (*gnas*) in the *dréné* chapter, but are delineated in the separate lymph disorders chapter along with goiters, thyroid disorders, and other conditions categorized in the *Four Tantras* with lymph gland conditions (*rmen bu'i nad*).⁶³ However, the *Four Tantras* does recognize a similar blood-*rlung* etiology for lymph gland *dré* as the other *dréné*.⁶⁴

6.5 *Important Commentarial Addition to Understanding of Dréné in the Four Tantras*

As many contemporary physician-scholars of Tibetan medicine have reviewed the commentarial scholarship written on *dréné* in their writings,⁶⁵ they acknowledge that most commentaries retain the classical sub-categories within *dréné* in the *Four Tantras*, with the exception of Desi Sanggyé Gyatso's (1653–1705) *Oral Instructions Supplement*.

As Czaja describes in his 2011 article mentioned above, Desi Sanggyé Gyatso delineates the additional category of “infection-derived *dré*” (*gnyan 'bras*),⁶⁶

61 G.yu thog yon tan mgon po, *Bdud rtsi snying po yan lag brgyad pa gsang ba man ngag gi rgyud*, 401.

62 G.yu thog yon tan mgon po, *Bdud rtsi snying po yan lag brgyad pa gsang ba man ngag gi rgyud*, 410.

63 G.yu thog yon tan mgon po, *Bdud rtsi snying po yan lag brgyad pa gsang ba man ngag gi rgyud*, 409–11.

64 G.yu thog yon tan mgon po, *Bdud rtsi snying po yan lag brgyad pa gsang ba man ngag gi rgyud*, 409; *rgyu rkyen drag shul rkyen gyis 'grams pa'am/rlung khrag 'khrugs pa rmen bu la brten skrang/phal cher ske mjing mig zur sne sa mang/*.

65 See for instance, Lha mo skyabs, *Bod lugs 'bras nad gso rig*; 'Jam dbyangs bkra shis, *Bod kyi gso ba rig pa'i 'bras nad*; Lde'u rong jo skyabs tshe ring, *Bod kyi gso rig las 'bras nad skor gyi dpyod gling*; and Dho lha, *Mchin pa'i Cancer la bod lugs gso rig gi btraq bcos zhib 'jug*, among others.

66 I choose to translate *nyendré* (*gnyan 'bras*) here as infection-derived due to its clinical use and understanding. *Nyen* illnesses (*gnyan nad*) are described as a class of illnesses with particularly intense suffering that come from those microorganisms, toxin-containing entities, and *barbata* from the external environment, as well as those which reside in the body primarily as blood microorganisms, with a round, appendage-less, and red appearance. The term itself confers the severity of the class of illnesses. See Byams pa 'phrin las, *Bod lugs gso rig tshig mdzod chen mo*, 281: *ngo bo phyi rol yul gyi dug can srin bu par pa ta dang nang lus la gnas pa'i khrag srin rkang med zlum la dmar ba gnyis lhan cig tu bsdungs pa las gyur pa'i nad rigs gdug pa can zhig gi ming ste/nges tshig nad kyi nyen che bas na gnyan nad ces bya'o/*. One of the noteworthy additions that Desi Sanggyé Gyatso makes throughout the *Supplement*, is the addition of *nyen* to various illnesses which are considered more serious. For example, he classifies the treatments for brain infection (*gnyan*

describing a condition that forms a *dré* from infection. This additional category of *dré* provides a nice addition to the *dréné* portfolio as a strong candidate for linking the Tibetan medical framework for abnormal growths to biomedical conceptions of both malignant and benign neoplasms, particularly forms that are related to the proliferation of pathogenic microorganisms, toxins, and carcinogens in the environment. From the biomedical perspective, many neoplasms begin from initial infections of viruses and pathogens, such as liver cancer developing from a chronic infection of the hepatitis B virus. Desi Sanggyé Gyatso also notes a strong connection to a degenerate era with numerous environmental and food toxins, similar to the innumerable familiar and yet-to-be-recognized carcinogens described today. Czaja describes that infection-derived *dré* was one of the only categories considered at the 1996 Dharamsala Men-Tsee-Khang conference convened on the topic of cancer.⁶⁷ Although “infection-derived *dré*” provides one part of the mapping project, it is certainly not sufficient by itself.

Considering the above presentation of *dréné*'s categorization and etiology, I would like to highlight several commonalities with biomedical cancer. First, the categorization of *dré* as a wound is similar to the biomedical term “ulcer,” which, in biomedicine, refers to an open sore on an external or internal surface of the body breaking the skin and mucous membranes, and in Tibetan medicine, refers to damage to the internal or external skin and/or muscle constituents.⁶⁸ Second, defining wound as damage to the bodily constituents has specific resonance to cellular and tissue damage and consequent growth in the

nad mgor babs klad gzer), infection-derived pains (*gnyan nad gzer thung ngam stod gzer/*), infection-derived abdominal cramps (*gnyan rims pho glang/*), infection-derived *méwel* (*gnyan rims me dbal/*), which are burn-like infections and ulcers, infection-derived lymph disorders (*gnyan rims rmen bu/*), among several others (Sangs rgyas rgya mtsho, *Man ngag yon tan rgyud kyi lhan thabs zugs rngu'i tsha gdung sel ba'i katpua* [Oral Instructions Supplement] [Dharamsala: Tibetan Medical and Astro Institute, 2005], xi–xii). Desi Sanggyé Gyatso introduces *nyendré* (*gnyan 'bras*) in both his chapter on treating *nyen* illnesses, as well as in the *dréné* treatment chapter (Sangs rgyas rgya mtsho, *Man ngag yon tan rgyud kyi lhan thabs*, 195, 366). In contemporary use among Tibetan physicians in Xining, Lhasa, and Dharamsala, *nyenné* is a category of contagious disease that often delineates those classes of disease that are most infectious and transmittable to instigate epidemics. For example, the plague, Ebola, and SARS would be classified as *nyenrim* illnesses (*gnyan rims*), a particularly contagious form of *nyen*. *Nyen* conditions are often identified as those derived from a virus, bacteria, amoeba, or other pathogenic-vector. *Rim* conditions are those that spread and infect others.

67 Czaja, “The Four Tantras and the Global Market,” 275.

68 In the biomedical context, an ulcer is an open wound that fails to heal, whereas in the Tibetan medical context the wound term refers simply to damage of the skin and/or muscle layers.

biomedical context. In the *dréné* case, damage occurs through trauma, disturbance or unripened bodily constituents similar to the conception of internal cellular damage, pathway signal dysregulation and unripened cell proliferation in the biomedical context, which we will see in more detail as we look at the particulars of the six characteristics defining cancer later. Thirdly, the specific body constituent region in which a *dréné* wound appears correlates well with the respective tissue layers in which cancer occurs. In the *Four Tantras*, the terms “skin” (*lpags*, or *skyi lpags*) and “muscle,” in addition to integumentary skin and muscle, respectively, are also used to describe layers of an organ, which relate similarly to the biomedical distinction of epithelial and connective tissue cells of organs. Epithelia are sheets of cells that line the walls of cavities, channels, organs, and the integumentary system or external covering of the body—the skin. Beneath the epithelial cell layer is a basement membrane often referred to as basal lamina, which separates epithelial cells from the underlying layer of supporting connective tissue cells called the stroma.⁶⁹ In contemporary anatomical depictions in Tibetan medicine, the epithelial layer is called *pak* (*pags*, *lpags*; skin or outer layer), *kyimo* (*skyi mo*; outer skin or layer), or *tum* (*thum*; sheath).⁷⁰ The basal lamina (*rmang leb*) and stroma (*mang rdzas phra phung*) are considered to be connected to the epithelial layer as distinguished from the muscle (*sha*, *sha grim*) as bodily constituents.⁷¹ Although using these terms to link to biomedical terms make them appear as neologisms, the concepts outlined above and related disease etiologies and treatments, precede their use in the *Four Tantras* and correlation to the biomedical terms.⁷² These terms also illuminate the conceptions of skin and muscle⁷³ unique to the Tibetan medical

69 Jean Kanitakis, “Anatomy, Histology and Immunohistochemistry of Normal Human Skin,” *European Journal of Dermatology* 12, no. 4 (2002): 390.

70 'O rtsogs chen, *Rgya bod dbyin gsum shan sbyar deng rabs gso rig ming mdzod* [Chinese-Tibetan-English Modern Medicine Dictionary] (Beijing: Mi rigs dpe skrun khang, 2011), 470; Pad ma rab brtan and Sangs rgyas 'bum, *Gso ba rig pa'i ro bkra'i dpe ris kun gsal me long* [All-Clarifying Mirror of Vivid Medical Dissectional Diagrams] (Xining: Mtsho sngon mi rigs dpe skrun khang, 2011), 92, 116.

71 'O rtsogs chen, *Rgya bod dbyin gsum shan sbyar deng rabs gso rig ming mdzod*, 239, 241.

72 For example, the various conceptions of *chuser* accumulation around specific organs and internal fascia rely on understandings of an outer layer for each organ and bodily constituent that is specified as the “skin layer” (*skyi pags*) of the heart, liver, and lungs, for example. Treatments such as paracentesis specifically address such accumulated *chuser* conditions adjacent and between these layers.

73 The term “muscle” provides the most appropriate translation for the Tibetan term *sha* because of its function and compositional distinction from “fat” (*tshil*) as described in the *Four Tantras*. G.yu thog yon tan mgon po, *Rtsa ba'i rgyud bshad pa'i rgyud phyi ma'i rgyud kha skong dang bcas pa*, 54: “Muscle covers; fat lubricates” (*sha yis g.yogs/ tshil gyis num/*). The term “flesh” in English is defined as describing “soft substance consisting

tradition. Skin and muscle are defined by the function of “covering the bones.”⁷⁴ Thus, on one hand, skin (*pags pa*) is subsumed under the same functionality as muscle (*sha*)—to cover the body. However, muscle is seen to closely relate to and be permeated by blood since it is formed from the blood constituent,⁷⁵ so vascularized connective tissue would provide a better corollary for the Tibetan term “muscle” (*sha*), and epithelia would provide a better corollary for the Tibetan term “skin” (*pags pa*). Fat, distinguished from both muscle and skin in the *Four Tantras*, is defined by its oiling and lubricating qualities with the associated characteristics,⁷⁶ and would relate to adipose tissue as well as interstitial fat constituents, such as those found in blood, around organs, and in joint spaces. Since epithelia spawn the most common human cancers—the carcinomas that are responsible for more than 80 percent of cancer-related deaths in the Euroamerican world⁷⁷—this distinction is important for our depiction of cancer from the perspective of the *Four Tantras*. The fourth commonality

of muscle and fat that is found between the skin and bones of an animal or a human” (Oxford Dictionary Online). This hybrid fat-muscle soft substance is not the understanding with the term *sha*. In the *Four Tantras*, fat is also described to arise from muscle in the development of the bodily constituents. G.yu thog yon tan mgon po, *Rtsa ba'i rgyud bshad pa'i rgyud phyi ma'i rgyud kha skong dang bcas pa*, 56: “From blood, muscle develops; from muscle, fat develops; from fat, bone develops; from bone, bone marrow develops” (*khrag las sha/ sha las tshil gyur tshil las rus par gyur/ rus las rkang gyur*). As a corollary, in biomedicine, fat cells (i.e., adipocytes) arise from the precursor cells for muscle cells (i.e., myocytes) called mesenchymal cells (Terence Ryan and Sergio Curri, “Genesis of Adipocytes,” *Clinics in Dermatology* 7, no. 4 [1989]: 9–24). Likewise, bone cells (osteoblasts) and cartilage cells (chondrocytes) also derive from mesenchymal cells (Donald Phinney and Darwin Prockop, “Concise Review: Mesenchymal Stem/Multipotent Stromal Cells: The State of Transdifferentiation and Modes of Tissue Repair—Current Views,” *Stem Cells* 25, no. 11 [2007]: 2896–902).

74 For muscle, see G.yu thog yon tan mgon po, *Rtsa ba'i rgyud bshad pa'i rgyud phyi ma'i rgyud kha skong dang bcas pa*, 54: “Blood moistens and sustains life, muscle covers” (*khrag gis brlan shing srog tsho sha yis g.yogs*). For skin, the embryology chapter of the *Explanatory Tantra* describes, “At the twenty-first week, skin encases the fetal body” (G.yu thog yon tan mgon po, *Rtsa ba'i rgyud bshad pa'i rgyud phyi ma'i rgyud kha skong dang bcas pa*, 43: *rtsa gcig pa la phyi yi pags pa g.yogs*). Whereas in the eighteenth week muscle has already formed: “In the fifth month, that is the eighteenth week, muscle and fat form” (G.yu thog yon tan mgon po, *Rtsa ba'i rgyud bshad pa'i rgyud phyi ma'i rgyud kha skong dang bcas pa*, 43: *zla lnga bdun phrag bco brgyad sha tshil chags*), distinguishing muscle from skin, where fat arises from muscle according to the developmental sequence of bodily constituents.

75 G.yu thog yon tan mgon po, *Rtsa ba'i rgyud bshad pa'i rgyud phyi ma'i rgyud kha skong dang bcas pa*, 56.

76 G.yu thog yon tan mgon po, *Rtsa ba'i rgyud bshad pa'i rgyud phyi ma'i rgyud kha skong dang bcas pa*, 54.

77 Weinberg, *The Biology of Cancer*, 29.

between *dréné* and cancer is the compounding, or inciting, conditions from which *dréné* forms, which are similar to the current understanding of the various causes of neoplasms and their transformation into malignant neoplasms types,⁷⁸ which we will discuss further later.

Dréné and *tren* as abnormal masses form obvious candidates in linking both *dréné* and *tren* to biomedical conceptions of neoplasms: both benign tumors as well as malignant cancers. However, like *tren*, *dréné* is a more complex disease category where not all *dréné* would be considered neoplasms from the biomedical perspective, especially those that comprise the initial stages of tissue damage only. And furthermore, those *dré* which would be considered neoplasms would not all be considered malignant. As *dréné* and *tren* are classically described in the *Four Tantras*, linking them as a single category to benign and malignant neoplasms seems a reasonable beginning in the correlation to the biomedical category of cancer. As such, we can understand the motivation to do so by one of the first Tibetan medical physicians Menpa Samten to author a text integrating perspectives from both Euroamerican and Tibetan traditions of medicine.

7 *Dré-Tren: Collapsing Categories, Sidelining the Three Default Systems*

In the *New Dawn Compendium of Medicine*, Menpa Samten re-maps Tibetan etiologies according to the physiological systems described in biomedicine with sections on the respiratory system (*'byin rngub kyi ma lag*), circulatory system (*'khor rgyugs kyi ma lag*), digestive system (*'ju byed kyi ma lag*), nervous system (*chu rtsa'am dbang rtsa'i ma lag*), and so forth. The great medical scholar-lama Troru Tsenam Rinpoché (1928–2004) praised the text as the first major work integrating perspectives from Tibetan and Euroamerican biomedicine. Educated during the 1970s and 80s with strong foundations in classical Chinese, Samten was one of the first Tibetan medical physicians to be able to read biomedical literature published in Chinese and assimilate such perspectives into Tibetan medical understandings and sensibilities.⁷⁹ He wrote the

78 See for instance O. H. Warburg, *The Metabolism of Tumours: Investigations from the Kaiser Wilhelm Institute for Biology, Berlin-Dahlem* (London: Arnold Constable, 1930); O. H. Warburg, "On the Origin of Cancer Cells," *Science* 123 (1956): 309–14; O. H. Warburg, "On Respiratory Impairment in Cancer Cells," *Science* 124 (1956): 269–70; M. G. Vander Heiden et al., "Understanding the Warburg Effect: The Metabolic Requirements of Cell Proliferation," *Science* 324 (2009): 1029–33.

79 Jamyang Gyatso, personal communication, 2018.

New Dawn Compendium of Medicine to appeal to a biomedical sensibility at a time when presenting Tibetan medicine in such a way that it could dialogue with biomedical physicians and scholars was important. At this time, reforms orchestrated by Chinese socialism included “direct revision of Tibetan medicine through Chinese biomedicalization” focused on eliminating important parts of Tibetan medical theory claiming that it contained “religious or superstitious elements.”⁸⁰ Thus, at the time of the publication of Samten’s text in 1985, the scientification of Tibetan medicine was well underway.⁸¹ Anthropologist and medical historian Theresia Hofer shows how central institutions like Men-tsee-Khang made a practice of leading such initiatives to survive, avoiding the marginalization that Medical House (*sman grong*) and monastery physicians incurred on the periphery.⁸² The anatomical charts in the front matter of Samten’s text use biomedical drawings with Tibetan terms designating anatomy, in contrast to the classical depiction of anatomy in the stylistic drawings of the medical thangkas commissioned by Desi Sanggyé Gyatso.⁸³ Drawing upon the biomedical drawings, and a distinctly biomedical sensibility of seeing the body,⁸⁴ might have afforded Samten and his colleagues an additional strategy to help Tibetan medicine survive, recover, and/or find its place during these challenging political times. Fortunately, Samten’s efforts to present Tibetan medical nosology in such a way that could be understood by the biomedical community allowed for an appreciation of and dialogue with Tibetan medical approaches to disease diagnostics and treatment that is still drawn upon by contemporary Tibetan doctors in collaborative contexts.⁸⁵ In Samten’s choices of disease categorization and presentation, he deemphasized classifications according to the *nyépa*, presumably so as to make them more

80 Vincanne Adams et al., eds., *Medicine Between Science and Religion*, 18.

81 Vincanne Adams and Fei-Fei Li, “Integration or Erasure? Modernizing Medicine at Lhasa’s Mentsikhang,” in *Tibetan Medicine in the Contemporary World: Global Politics of Medical Knowledge and Practice*, ed. Laurent Pordié (London and New York: Routledge, 2008), 105–31; Adams et al., “Translating Science: The Arura Medical Group at the Frontiers of Medical Research,” 111–36.

82 Theresia Hofer, *Medicine and Memory in Tibet: Amchi Physicians in an Age of Reform* (Seattle: University of Washington Press, 2018).

83 For a description, see for instance Katharina Sabernig, “On the History of the Murals in the Medical College at Labrang Monastery,” *Asian Medicine* 7 (2012): 358–83.

84 See Shigehisa Kuriyama, *The Expressiveness of the Body and the Divergence of Greek and Chinese Medicine* (New York, NY: Zone Books, 2002) for a related account on disparate cultural views of the body depicted vis-à-vis anatomical drawings in classical Greek medicine and classical Chinese medicine.

85 Jamyang Gyatso, personal communication, 2018.

accessible to a biomedical audience. In this modern nosology, Samten defines *dré-tren* categorically as follows:

Drétren primarily arise from the causative condition of a nutritional essence metabolic disturbance [in] the stomach, liver and so forth from which abnormal excess products grow in uncertain locations in the vital and vessel organs and bodily constituents. Turning into a mass, it absorbs the body's essential nutrients. [The growths] obstruct the pathways of the bodily constituents and due to harming the critical sensory organ faculties and so forth, it is an illness which incites great fear and concern for [one's] life.⁸⁶

Samten's description of his newly classified, combined category of *drétren* retains an etiology consistent with both the classical descriptions of *dré* and *tren* in the *Four Tantras* and in Desi Sanggyé Gyatso's later contribution of the *Oral Instructions Supplement*. However, Samten integrates a biomedical lens in his account by describing products (*grub cha*) and nutrient compounds (*dwangs ma'i bcud rdzas*), for instance, and is the first to overtly place *dré* and *tren* in a single category beyond the group of nutritional essence metabolic disturbance illnesses from two of the four subtypes of the chronic metabolic disturbances: namely, twisting (*'tril ba*) and spreading (*byer ba*) natures of the disturbance.⁸⁷ Categorically placing *dré* and *tren* together, he makes an overt link to biomedical descriptions of cancer, integrating perspectives from both Euroamerican and Tibetan medical traditions. He does not describe the "types" (*rigs*) of *dréné* as described in the *Four Tantras* that employ the etiological distinctions from imbalances in the default systems driving the formation of *dré*. In doing so, he omits the subtypes within both *dré* and *tren* that do not threaten one's life and are considered easy to treat. For example, in the *Four Tantras*, old blood *tren* are considered one of the easiest illnesses to treat.⁸⁸

86 Bsam gtan, *Gso rig snying bsdus skya renngs gsar pa*, 276: 'bras skran zer ba de ni phal cher dwangs ma ma zhu ba'i rkyen gyis pho mchin sogs lus zungs don snod kyi gnas nges med du rgyun ldan min pa'i grub cha 'thol pa 'tshar skyes byung ba dang/ gong bur bsgril nas lus khams kyi dwangs ma'i bcud rdzas 'jib 'then byed pa dang/ lus zungs kyi bu ga'i rgyu lam bkag pa/ gal che'i dbang rten la gnod 'tshe gtong ba sogs byas nas mi'tshe srog la 'jigs snang tshabs chen bskul ba'i nad cig red/.

87 G.yu thog yon tan mgon po, *Bdud rtsi snying po yan lag brgyad pa gsang ba man ngag gi rgyud*, 169: 'dril bas skran nmams skyed par byed pa ste/ [...] byer bas dug mdze me dbal 'or du lhung/ 'bras dang sur ya dreg dang grum bu dang/ mig ser rtsa skran rkang 'bam du mar 'gyur/ [...] nad nmams phal cher dwangs ma ma zhus skyed/.

88 G.yu thog yon tan mgon po, *Rtsa ba'i rgyud bshad pa'i rgyud phyi ma'i rgyud kha skong dang bcas pa*, 170: 'on kyang rims la yul dus mtshungs pa dang/ chu 'gags nad la gnod bya mnyams pa dang/ khrag skran rnying pa gso ba sla zhes bya/.

Instead, he lists the other classic categories from the *Four Tantras* of external and internal forms of *dréné*, as well as those categorized by location (*gnas*) of growth formation, and identifies which types of *tren* should be suitably linked within the *dré-tren* category.

The *tren* that Samten puts in the *drétren* category comprise: gastroesophageal *tren* (*lhen skran*),⁸⁹ which is subsumed in the larger category of gastric *tren* (*pho skran*), *tren* of fat constituent (*tshil skran*), *tren* of the ovaries and related reproductive pathways (*bsam se'u'i skran*), uterine and cervical *tren* (*mngal skran*), and skin *tren* (*pags skran*). He describes that *tren* is named because it is a mass (*gong bu*) that aggregates (*bsgril ba*) into a distinct, isolated entity (*kher rkyang du*) anywhere in the body.⁹⁰ Samten makes the distinction that *tren* do not have the characteristic of propagating to other areas of the body.⁹¹ Thus, one can infer that for Samten, *tren* are benign tumors, and *dré* are malignant.

However, as we have seen from the above analysis, Samten's characterization exaggerates a simplification of the *tren* and *dréné* etiologies in order to collapse them into a single category, providing a one-to-one correlation with benign tumors and malignant cancers. The nosological complexity and its attendant epistemological and ontological perspectives get jettisoned in the process. As shown above from the classical depiction in the *Four Tantras*, several *tren* types are not neoplasms or tumors, and some *tren* types that are neoplasms can become malignant. Likewise, some *dré* are benign and do not spread in the body. Furthermore other diseases in Tibetan medicine, such as *méwel* and *surya* have subtypes which are malignant growths and spread like malignant cancers, which we will discuss further below. Likewise, in Samten's characterization of *tren*, skin *tren* is not skin cancer as one might assume. Instead, he describes it as a clogged hair follicle that forms a mass, which is also not a neoplasm.⁹² Samten calls metabolic disruptions due to waste products in the stomach "bezoars," glossing them as "adhesive products in gastric juices."⁹³ Samten does

89 The Tibetan term *lhen* refers to the juncture between the esophagus (*mid pa*) and stomach (*pho ba*). It describes an anatomical position between the two organs as well as an external location proximal to that juncture upon which an important moxibustion point resides called the *lhen sang* (*lhen gyi me gsang*). A mass growing at the esophageal-gastric juncture is called a *lhen tren* and is classified in the *Four Tantras* (G.yu thog yon tan mgon po, *Bdud rtsi snying po yan lag brgyad pa gsang ba man ngag gi rgyud*, 175) as well as in Samten's *New Dawn Compendium of Medicine* (Bsam gtan, *Gso rig snying bsdus skya rengs gsar pa*, 276).

90 Bsam gtan, *Gso rig snying bsdus skya rengs gsar pa*, 277.

91 Bsam gtan, *Gso rig snying bsdus skya rengs gsar pa*, 277: *gnas bzhan du mched mi 'gro ba/*.

92 Bsam gtan, *Gso rig snying bsdus skya rengs gsar pa*, 282: *pags skran zer ba de ni phal che ba ba spu'i bu ga 'gags pa'i rkyen gyis lus zungs kyi snyigs ma phyir don mi thub par skran du 'dril nas 'bur rdog don pa'i nad cig red/*.

93 Bsam gtan, *Gso rig snying bsdus skya rengs gsar pa*, 280: *pho chur 'byar tshi skye ba/*.

not mention any blood *dré* and keeps lymph *dré* in the lymph gland category as is classically found for lymph *dré* in the *Four Tantras*, as described earlier.

8 Retaining Epistemologies and Etiologies: Providing a Map

In sidelining the *nyépa* as important etiological distinctions for each illness, simplifying the categories of *dréné* and *tren* to force a single category, and disregarding the etiological cousins of other nutritional essence metabolic disturbances as candidate links, I argue that Samten's fairly recent modern symphysis is insufficient in providing a comprehensive mapping of biomedical neoplasms into the suitable Tibetan medical categories, despite its important historical contribution to this project. In the following, I present the six characteristics predominantly recognized by cancer biologists currently as the defining criteria for cancer, then I attempt to provide a mapping for the characteristics that still retains the classical categories and etiological understandings found primarily in the *Four Tantras* with the addition of infection-derived *dré* provided by Desi Sanggyé Gyatso's *Oral Instructions Supplement*.

8.1 Six Defining Characteristics of Cancer

Cancer biologists have shown that, under a microscope, a malignant cell has a dilated nucleus, thin rim of cytoplasm, and an autonomous engine to continue dividing, driven by mutations to the genetic code.⁹⁴ Such cells are immortal, inhibiting the cellular instructions for apoptosis (normal cell death) as well as senescence (the delay of normal cellular cycles).⁹⁵ As early as 1858, physician and biologist Rudolf Virchow, known for his advancement of public health, argued that cancer is the result of inflammation due to injury or response to an external agent such as bacteria or pathogen,⁹⁶ which causes swelling and immune system activation, and consequently causes cells to proliferate. This cell proliferation would lead to an outgrowth of malignant cancer.⁹⁷ Virchow's early insights on cancer development in cells remain highly relevant today for current understandings. Chronic inflammation over a long period of time,

94 Douglas Hanahan and Robert A. Weinberg, "The Hallmarks of Cancer," *Cell* 100, no. 1 (2000): 57.

95 J. M. Adams and S. Cory, "The Bcl-2 Apoptotic Switch in Cancer Development and Therapy," *Oncogene* 26 (2007): 1324–37.

96 M. Schäfer and S. Werner, "Cancer as an Overhealing Wound: An Old Hypothesis Revisited," *Nature Reviews Molecular Cell Biology* 9 (2008): 628–38.

97 Siddhartha Mukherjee, *The Emperor of All Maladies: A Biography of Cancer* (New York, NY: Scribner, 2010), 340.

such as decades, is still recognized as contributing to the transformation of a benign neoplasm into malignancy and is currently gaining greater research attention for its integral role.⁹⁸ Although there are one hundred distinct types of cancer and many subtypes of tumors specific to an organ and tissue, there are commonalities in the disruption of the distinct regulatory circuits that manage normal cell proliferation and homeostasis, such as that resultant from chronic inflammation and pathogenic agents.⁹⁹ Cancer biologists Robert Weinberg and Douglas Hanahan have dedicated their research careers to understanding the genetic basis for cancer and are considered two of the foremost authorities. Weinberg discovered the first human oncogene and the first tumor suppressor genes, and his work led to the discovery of over one hundred cancer cell types. Douglas Hanahan developed the first transgenic mouse models for cancer. Their seminal papers published in January 2000 and updated 2011 review have provided the foundation for contemporary studies and further cancer research development by providing the six functional capabilities that cells acquire to transform normal cells into malignancy:

1. Self-sufficiency in growth signals,
2. Insensitivity to growth-inhibitory (antigrowth) signals,
3. Evasion of programmed cell death (apoptosis),
4. Limitless replicative potential,
5. Sustained angiogenesis (or the development of blood supply), and
6. Tissue invasion and metastasis.¹⁰⁰

In the following section, I will provide a brief description of each functional capacity recognized.

98 Carlos Cordon-Cardo and Carol Prives, "At the Crossroads of Inflammation and Tumorigenesis," *The Journal of Experimental Medicine* 190, no. 10 (1999): 1367–70; A. Zumsteg and G. Christofori, "Corrupt Policemen: Inflammatory Cells Promote Tumor Angiogenesis," *Current Opinion in Oncology* 21 (2009): 60–70.

99 Cooper, *Elements of Human Cancer*.

100 D. Bonnet and J. E. Dick, "Human Acute Myeloid Leukemia is Organized as a Hierarchy That Originates from a Primitive Hematopoietic Cell," *Nature Medicine* 3 (1997): 730–37; Hanahan and Weinberg, "The Hallmarks of Cancer," 57; G. Bergers and L. E. Benjamin, "Tumorigenesis and the Angiogenic Switch," *Nature Reviews Cancer* 3 (2003): 401–10; Adams and Cory, "The Bcl-2 Apoptotic Switch," 1324; I. Amit et al., "A Module of Negative Feedback Regulators Defines Growth Factor Signaling," *Nature Genetics* 39 (2007): 503–12; Z. Ahmed and R. Bicknell, "Angiogenic Signaling Pathways," *Methods in Molecular Biology* 467 (2009): 3; V. Baeriswyl and G. Christofori, "The Angiogenic Switch in Carcinogenesis," *Seminars in Cancer Biology* 19 (2009): 329–37; S. E. Artandi and R. A. DePinho, "Telomeres and Telomerase in Cancer," *Carcinogenesis* 31 (2010): 9–18; K. Pietras and A. Ostman, "Hallmarks of Cancer: Interactions with the Tumor Stroma," *Experimental Cell Research* 316 (2010): 1324–31. Their 2011 update (Hanahan and Weinberg, "Hallmarks of Cancer: The Next Generation," *Cell* 144, no. 5 [2011]: 646–74) expands on their initial 2000 article.

Self-sufficiency in growth signals. For self-sufficiency in growth signals, signals must originate internally. Normal cells require mitogenic growth signals before they move from a quiescent state into an active proliferative state, growing their mass and dividing to produce new cells. Such signals originate elsewhere in the body and enter the cell through transmembrane receptors. Cancer cells have their own set of oncogenes that mimic normal growth signals. Hanahan and Weinberg describe that normal cells require growth factors (GFs) from different cell types to stimulate proliferation; however, cancer cells acquire the ability to synthesize GFs themselves, to which they themselves are also responsive—creating a positive feedback loop. They also have an over-expression of cell surface receptors, making them hyper-responsive to ambient levels of growth factors that would not normally trigger proliferation.

Insensitivity to antigrowth signals. Similar to their positively acting counterparts, growth-inhibitory signals must be received by transmembrane cell surface receptors to induce intracellular signaling circuits. Such signals function in two ways: a cell may be forced from its proliferative cycle into a quiescent state until another extracellular signal permits; or cells may be induced into a post-mitotic state that permanently relinquishes their proliferative potential. Cancer cells neither produce nor respond to growth-inhibitory signals.

Apoptosis evasion. All normal cells have a latent form of programmed cell death (apoptosis) that is triggered by physiological signals and unfolds in a choreographed series of steps—the cell membrane is disrupted, the cytoplasmic and nuclear skeletons break down, the cytosol is extruded, chromosomes degraded, and nucleus fragmented. This occurs in a matter of 30–120 minutes, and the resultant shriveled cell corpse is engulfed by nearby cells in a tissue and disappears, usually within twenty-four hours.¹⁰¹ Sensors and effectors are two components that determine whether the apoptotic program is put into play. Sensors determine the normality of the intracellular environment and effectors receive that signal to enact the apoptotic program. Detected abnormalities include DNA damage, survival factor insufficiency, and hypoxia. Malignant cancer cells are able to evade the apoptotic program.¹⁰² The most common way cancer cells lose proapoptotic regulation is through a mutation involving a tumor suppressor gene (the p53 tumor suppressor gene) and the resulting functional inactivation of its product (the p53 protein). The survival signaling circuit can be activated by extracellular factors.¹⁰³

101 Hanahan and Weinberg, “The Hallmarks of Cancer,” 61.

102 Adams and Cory, “The Bcl-2 Apoptotic Switch.”

103 Such as such as IGF-1/2 or IL-3 (G. Evan and T. Littlewood, “A Matter of Life and Cell Death,” *Science* 281, no. 5381 [1998]: 1317–22). For an example of related immune-mediated

Limitless replication. So far we have seen that three acquired abilities—growth signal autonomy, insensitivity to antigrowth signals, and resistance to apoptosis—lead to an uncoupling of a cell's growth program from signals in its environment.¹⁰⁴ This could be enough to create vast cell populations, but studies have identified another independent program that limits cell multiplication. Once normal cell populations progress to a certain number of doublings, they enter what is called “senescence,” where they stop growing. If certain elements are disabled, cells can continue multiplying for additional generations until a crisis state occurs of massive cell death. However, a variant sometimes arises that has the trait of immortality, which allows cancer cells to gain limitless replicative potential.¹⁰⁵

Sustained angiogenesis. All normal cells in a tissue must reside within 100 millimeters of a capillary blood vessel in order to retrieve oxygen and nutrients required for cell function and survival.¹⁰⁶ Most new aberrant proliferating cells or lesions lack angiogenic ability, which curtails their expansion capacity. Thus, malignant neoplasms are unique in that they develop angiogenic ability, or the capacity to develop their own blood supply.¹⁰⁷

Tissue invasion and metastasis. The ability for primary tumor masses to spawn pioneer cells that move out to invade adjacent tissues and distant sites where they set up new colonies—that is, metastases—are the cause of the great majority of human cancer deaths.¹⁰⁸ Although Euroamerican medical science does not understand invasion and metastasis well, which it locates as genetic and biochemical determinants, it does recognize that several proteins are implicated in tethering cells to their surrounding tissue, which,

equilibrium with cancer, see M. W. L. Teng et al., “Immune-mediated Dormancy: An Equilibrium with Cancer,” *Journal of Leukocyte Biology* 84 (2008): 988–93.

104 Adams and Cory, “The Bcl-2 Apoptotic Switch,” 1324.

105 Studies have shown the primary counting device for cell generations is telomeres—that is, the ends of chromosomes. Various treatments that allow for telomere repair help to lengthen lifespan and vitality, but would also increase the incidence of malignant tumor cells since 85–90% of such cells upregulate expression of the telomerase enzyme, allowing them to maintain telomere length above a critical threshold, and thus permitting unlimited replication (Wright et al., “Expression of c-erb B-2 Oncoprotein: A Prognostic Indicator in Human Breast Cancer,” *Cancer Research* 49 [1989]: 2087–90; Hanahan and Weinberg, “The Hallmarks of Cancer,” 63).

106 Hanahan and Weinberg, “The Hallmarks of Cancer,” 63.

107 Ahmed and Bicknell, “Angiogenic Signaling Pathways,” 3. Loss of p53 tumor suppressor protein occurs in most human tumors. This can simultaneously cause thrombospondin-1 levels to fall, which allows endothelial cells to be liberated from angiogenic suppression effects (A. Patenaude et al., “Involvement of Endothelial Progenitor Cells in Tumor Vascularization,” *Microvascular Research* 79 [2010]: 217–23).

108 M. B. Sporn, “The War on Cancer,” *Lancet* 347, no. 9012 (1996): 1377–81.

when altered, provide cells with invasive and metastatic capabilities.¹⁰⁹ This is the final capacity for cancer cells to achieve in order to gain all six of its defining characteristics.

8.2 *Tibetan Medical Etiological Links to the Six Characteristics*

Reflecting on these six defining characteristics as outlined above by Hanahan and Weinberg, I propose specific etiological links drawing from the *Four Tantras* that identify the Tibetan medical disease categories related to biomedical cancer and neoplasms. I recognize a correlating association between chronic inflammation and the Tibetan medical conception of aggravated *rlung* and the development of poor quality blood (*ngan khrag rgyas pa*). Contemporary biomedical researchers understand inflammation as a normal protective physiologic response that coordinates immune cells, blood vessels, and molecular mediators to eliminate the initial cause of tissue and cellular injury. However, in its chronic form, a perceived threat by the body persists aggressive cells systematically over time and causes chronic damage. Since *rlung* regulates cellular signaling, neuroendocrine functions, immune activation, and the mobility of proper constituents in the blood, chronic inflammation relates to *rlung* activities coordinated with related blood constituents. Illnesses that relate to biomedical conceptions of cancer would draw upon these two characteristics of disease ecology.

Growth/anti-growth signals and rlung-tripa activity. Contemporary Tibetan physicians link abnormal cell proliferation from the biomedical perspective to a combination of aggravated *rlung* and *tripa* activity due to their role in growth of the bodily constituents, and particularly abnormal blood qualities.¹¹⁰ Likewise, they link *rlung* activity to cellular responsiveness since *rlung* manages signal transmission in the body.¹¹¹ Thus, in order to interpret Hanahan and Weinberg's six functional capacities of malignant cells in terms of a Tibetan medical sensibility, I highlight the role of a combined influence of *rlung* and blood-related *tripa* (that is, unrestrained cell proliferation and particular

109 These proteins called cell-cell adhesion molecules (CAMs) are classes of immunoglobulins and calcium-dependent cadherins. Integrins and proteases also play a key role in invasive and metastatic potential (Hanahan and Weinberg, "The Hallmarks of Cancer," 65).

110 Jamyang Gyatso, personal communication, 2018; referring to G.yu thog yon tan mgon po, *Rtsa ba'i rgyud bshad pa'i rgyud phyi ma'i rgyud kha skong dang bcas pa*, 39: *sa med mi 'grub chu med sdud mi nus/ me med mi smin rlung med 'phel mi 'gyur/*.

111 Jamyang Gyatso, personal communication, 2018; referring to G.yu thog yon tan mgon po, *Rtsa ba'i rgyud bshad pa'i rgyud phyi ma'i rgyud kha skong dang bcas pa*, 58: *nyes pa'i las ni rlung gis dbugs 'byin rngub/ bskyod dang las spyod shugs 'byin gnod bya rgyu/ dbang po gsal dang lus rjes 'dzin par byed/*.

supply access in blood and lymph vessels) and excess aggravated *rlung* alone (that is, cellular signaling in growth, mobility, and perpetuity).

Limitless replication and abnormal proliferation of the body constituents. To generate an aggregation in the body of limitless proliferation from the perspective of the *Four Tantras* requires the synchronization of resources in order to provide the mass, growth, and ripening of those bodily constituents. The capacity to dominate control of the first two constituents—nutritional essence and blood—are required for excess development and proliferation of any of the other constituents. Thus, I argue that the disorders in the *Four Tantras* related to cancer would direct nutritional essence advantageously, and result from excess blood, as is the case with nutritional essence metabolic disorders. To provide greater growth, such disorders must also excessively mobilize *rlung* and *tripa* activities while dominating mass accumulation functions of *béken*.

Apoptosis evasion and rlung. As discussed above, contemporary Tibetan physicians describe cell signaling as a *rlung* activity. The ability to maintain function would require continual mobilization of resources from that ingested into the body. The *Four Tantras* characterizes all mobilization as *rlung* activity. Thus, apoptotic evasion would likely be linked to the hyperactivity of *rlung*.

Sustained angiogenesis and abnormal proliferation of blood. Angiogenesis around abnormal cell masses relates well to the condition of abnormal blood excess in the *Four Tantras*. A quality common with the general nutrient essence metabolic disturbance, as well as the specific conditions like *dréné*, channel *tren*,¹¹² *méwel*, and *surya*.

Metastatic capacities as a result of diminished béken and aggravated rlung. Due to the adhesive qualities required to tether a cellular mass to its original site, metastatic occurrences would relate to the down-regulating of the adherence-promoting activity of *béken* and the upregulation of etiological variants of the conditions discussed above.

The etiological links to the six defining characteristics of biomedical cancer outlined above relate to a subset of nutritional essence metabolic disturbances in the *Four Tantras*, namely *dréné*, channel *tren*, *méwel*, *surya*, and blood proliferation compounded by aggravated *rlung*. As such they provide an etiological context upon which biomedical cancer mapped. Furthermore, there are a few conditions for biomedical cancer to form that assists our analysis.

112 G.yu thog yon tan mgon po, *Bdud rtsi snying po yan lag brgyad pa gsang ba man ngag gi rgyud*, 176: *dwangs ma ma zhu ngan khrag rgyas pa de/ mchin dri glo mkhal rgyu grog pho ba'i rtsar/ 'grims pa sa gcig 'dril pa rtsa yi skran/*.

An enabling characteristic for cancer formation in biomedicine is genome instability, which allows for the six characteristics mentioned above to develop. Karyotypic order, or the number and appearance of the chromosomes within a cell, is fastidiously maintained by innumerable DNA monitoring and repair enzymes. Likewise, mitosis, or regulated cell division, provides an important checkpoint in the cell's life to ensure that mutations are rare. Increased mutability has been posited to account for the significant frequency with which cancers appear in human populations.¹¹³ Because of the number of steps and alterations required, cancers tend to be rare early in the human lifetime and take hold later in life, similar to the condition required for “metabolic disruptions of the nutritional essence” to progress into these advanced and chronic conditions. Causes of genome instability and cellular damage still relate back to Virchow's initial two causal trajectories of cellular and tissue damage due to inflammatory response and pathogenic agents, as well as the related genetic susceptibilities. I point out that the two-fold driving forces in transforming benign neoplasms to malignant cancer bear a striking resemblance to the dual categories in Desi Sanggyé Gyatso's *Oral Instructions Supplement*. The latter's two major subcategories of *dré* formation comprise: (1) “wound-derived *dré*” (*rma 'bras*), which resembles Virchow's inflammation response due to injury; and (2) “infection-derived *dré*,” which resembles the response to an external pathogenic agent, as in the case of general *nyenné* described above. In some, these forms of damage to the development and maintenance of bodily constituents results from a metabolic disruption as described in the *Four Tantras*. In the next section, I will describe how this conceptual perspective shapes the correlation between biomedical cancers and related illnesses in the *Four Tantras*.

9 “Metabolic Disruptions” as Broader Context: More Candidate Illnesses

Many conditions, including both *dréné* and *tren* result from “metabolic disruption” (*ma zhu ba*) conditions. In fact, the *Four Tantras* identifies metabolic disruptions as the root of all chronic illness.¹¹⁴ It describes that proper

113 Lawrence A. Loeb, “Mutator Phenotype May Be Required for Multistage Carcinogenesis,” *Cancer Research* 51 (1991): 3075–79.

114 G.yu thog yon tan mgon po, *Bdud rtsi snying po yan lag brgyad pa gsang ba man ngag gi rgyud*, 168: “The cause of chronic illness, ‘metabolic disruptions,’ has six general points” (*ma zhu gcong gi rgyu la spyi don drug/*).

development of life-sustaining blood (*zung*s *kh*rag) is not only important for developing the various bodily constituents, organs, fluids, vessels, channels, and so forth, but its malfunction is the primary mechanism for developing chronic conditions propagated from the liver and the downstream developing body constituents and processes. According to the *Four Tantras*, there are two main types of metabolic disruptions: waste product disruptions¹¹⁵ and nutritional essence disruptions.¹¹⁶ Waste product disruptions occur when ingested contents remain in the stomach or colon and coalesce from excess *bé*ken mucosal and viscous digestive constituents, such that the waste products of the ingested materials are overly coated, stagnate, and adhere to tract walls, where they remain for long time periods, eventually forming hardened masses and accretions. Nutritional essence metabolic disruptions, where waste product infiltrates the nutrient stream pathways and causes disruption in liver function and proper blood production as described further in the above section, have four subtypes: (1) wrapping or condensing (*'dril ba*), (2) leaking or dropping (*zags pa*), as with fluid, (3) dispersing or spreading (*byer ba*), and (4) posturing (*'gyings pa*).¹¹⁷ These four types characterize processes that lead to an underlying metabolic disruption condition to develop into various illnesses. For example, *tren* arise from the wrapping (*'dril ba*) condition, and *dréné* and channel-type *tren* arise from the spreading (*byer ba*) condition. Both *dréné* and *tren* arise from abnormalities in the processes driving proper formation of the bodily constituents, which comprise all bodily components, organs, fluids, and their respective products.¹¹⁸ Disturbance in proper constituent development produces abnormalities at subsequent levels, creating adhesions, aggregations, and masses.

In reviewing these etiologically-similar classes of illnesses outlined in the *Four Tantras*, several other candidate Tibetan medical illnesses upon which biomedical neoplasms, both benign and malignant, map become apparent. Particularly in the spreading condition of metabolic disruptions of nutritional essence, the *Four Tantras* lists: toxin disorders, leprosy (*mdze*), *mé*wel (burn-like irritations), secondary edema, *dré*, *surya* (irritations and ulcers that spread

115 G.yu thog yon tan mgon po, *Bdud rtsi snying po yan lag brygyad pa gsang ba man ngag gi rgyud*, 189: *snyigs ma ma zhu ba/*.

116 G.yu thog yon tan mgon po, *Bdud rtsi snying po yan lag brygyad pa gsang ba man ngag gi rgyud*, 189: *dwangs ma ma zhu ba/*.

117 G.yu thog yon tan mgon po, *Bdud rtsi snying po yan lag brygyad pa gsang ba man ngag gi rgyud*, 169.

118 G.yu thog yon tan mgon po, *Rtsa ba'i rgyud bshad pa'i rgyud phyi ma'i rgyud kha skong dang bcas pa*, 23, 54: "nutritional essence, blood, muscle, fat, bone, bone marrow and regenerative fluid" (*dwangs ma khrag sha tshil rus rkang khu ba*).

like sun-rays), gout, arthritis, jaundice, channel *tren* in blood and lymph vessels and nerves, and *kangbam* (which includes various leg disorders like varicose veins).¹¹⁹ From this list, I integrate *méwel* and *surya* into my analysis of the prospective Tibetan medical disorders upon which biomedical malignant and benign neoplasms map, as well as note why *tren* of specific channels (*rtsa*) in the body, which include blood vessels, nerves, and lymph vessels,¹²⁰ is uniquely distinguished from the other *tren* types within this group. Now the expanded collection of illnesses in the *Four Tantras* onto which I propose biomedical cancer maps include: *dréné* and *tren*, but also include “*béken* throat obstructions” (*bad kan mgul 'gags*),¹²¹ which are growths in the esophagus known as esophageal *dré* (*mid 'bras*);¹²² *méwel*; *surya*; proliferation of diseased blood (*nad khrag 'phel ba*); proliferation of bone marrow (*rkang mar*); and lymph gland *dré* (*'bras rmen*) from the chapter on lymph disorders (*rmen bu'i nad*) as well as the subcategory spreading condition (*byer ba*), dispersing or spreading, in proliferating “metabolic disruptions.”

In the next section, I will briefly analyze how biomedical categories of cancer map onto these Tibetan medical categories by looking at three instructive conditions—skin cancer, leukemia, and lymphoma describing how they are etiologically and diagnostically distinguished.

9.1 Skin Cancer and Méwel

Skin cancer provides an illustrative case when considering its place in the Tibetan medical nosological system because there is no skin *dré* beyond what I have described above in the *Four Tantras*, Desi Sanggyé Gyatso's *Oral Instructions Supplement*, and Samten's modern synthesis regarding

119 G.yu thog yon tan mgon po, *Bdud rtsi snying po yan lag brygad pa gsang ba man ngag gi rgyud*, 169: *byer bas dug mdze me dbal 'or du lhung/ 'bras dang sur ya dreg dang grum bu dang/ mig ser rts skran rkang 'bam du mar 'gyur/*.

120 “Channels” (*rtsa*) also include ligaments (*chu ba*) and tendons (*rgyus pa*), as seen in the white channel category that includes *chu rtsa*, *rlung rtsa*, *dbang rtsa*, *rgyus rtsa*, and *srog rtsa dkar po*. See Zur mkhar pa blo gros rgyal po, *Rgyud bzhi'i 'grel pa mes po'i zhal lung* (Beijing: Krung go'i pod kyi shes rig dpe skrun khang, 2005), 205, 216–7; Sangs rgyas rgya mtsho, *Gso ba rig pa'i bstan bcos sman bla'i dgongs rgyan rgyud bzhi'i gsal byed bai durya sngon po'i malli ka* [Blue Beryl] (Dharamsala: Tibetan Medical & Astro Institute, 1994); 'Jam dbyangs bkra shis, *Bod kyi gso ba rig pa'i 'bras nad*, 39.

121 *Béken* throat obstructions (*bad kan mgul 'gags*) are a specific disease category within the *béken* default system that have a similar etiology to *dré* of the stomach and esophagus, in which esophageal *dré* are one of the most predominant forms and thus often described as synonymous conditions.

122 Sangs rgyas rgya mtsho, *Man ngag yon tan rgyud kyi lhan thabs*; Lha mo skyabs, *Bod lugs 'bras nad gso rig*, 110.

obstructed hair follicles. Although skin (*pags pa*) is not enumerated among the seven bodily constituents (*lus zungs*),¹²³ it is recognized as a region specific to *tripa* pathways and activities. In short, the skin is one of the regions where *tripa* resides.¹²⁴

Since the skin (*pags pa*) in the *Four Tantras* is subsumed under the same functionality as muscle (*sha*)—to cover the body—as described above, one might initially consider skin cancer as a type of “flesh *dré*” (*sha ’bras*), where “flesh” is being used here as a hybrid skin/muscle term instead of its common use as a muscle/fat substance: “Specifically, flesh *dré* resembles a frozen moist turnip.”¹²⁵ One would also assume that it shares the general diagnostics of “a subtle trembling pulse”¹²⁶ for all *dré* that manifest externally, as well as their characterization: “swollen, hard, and stiff, and manifesting little pain.”¹²⁷ It would also have all the subtypes of *dréné*: *rlung*, *tripa*, blood, *béken*, wound-induced (*mtshon ’bras*), and small bird egg-sized (*bye ’bras*).¹²⁸

However, I propose that the category of *méwel* in its aggressive form has a more instructive and convincing link to biomedical conceptions of skin cancer, and as many contemporary Tibetan physicians frequently note, more mild forms of *méwel* link to the biomedical clinical presentation of *Herpes simplex* as well as other inflammatory dermal conditions and infections.¹²⁹ *Méwel* is described as a disorder of burn-like irritations on superficial parts of the external and

123 The *Bod lugs gso rig tshig mdzod chen mo* does not define “skin” or “bodily constituent” well. The *Yutok Gonggyen* (Dbang ’dus, *Gso ba rig pa’i tshig mdzod g.yu thog dgongs rgyan* [Beijing: Mi rigs dpe skrun khang, 1973], 602) does not define skin well, but it does refer to several accounts of the bodily constituents: *lus zungs/ byang pa rnam rgyal grags bzang gis mdzad pa’i bshad rgyud kyi ’grel ba bdud rtsi’i chu rgyun las/ lus ’dzin par byed pa’i phyir lus zungs zhes so/ zhes dang/ zla zer las/ zungs kyi sgra ni ’dzin pa’i don no/ zhes gsungs so/*. Thus, the bodily constituents are those which uphold the body, a repository for the body.

124 As described in the *Explanatory Tantra*, G.yu thog yon tan mgon po, *Rtsa ba’i rgyud bshad pa’i rgyud phyi ma’i rgyud kha skong dang bcas pa*, 79: “The regions in which *tripa* resides include the navel, stomach, blood, sweat, nutritional essence, chuser, eyes, and skin” (*mkhris gnas lte ba pho ba khrag dang rngul/ dwangs ma chu ser mig dang pags pa ste/*).

125 G.yu thog yon tan mgon po, *Bdud rtsi snying po yan lag brgyad pa gsang ba man ngag gi rgyud*, 400: *khyad par sha ’bras nyung gsher ’khyags pa ’dra/*.

126 G.yu thog yon tan mgon po, *Bdud rtsi snying po yan lag brgyad pa gsang ba man ngag gi rgyud*, 400: *rtsa rgyud phra la ’dar/*.

127 G.yu thog yon tan mgon po, *Bdud rtsi snying po yan lag brgyad pa gsang ba man ngag gi rgyud*, 400: *skrangs pa sra brtan na zug chung la/*.

128 A “small bird egg-sized” type of *dréné* (*bye ’bras*) is glossed as the size and shape of a small bird’s egg (*bye ’bras kyi rtags ni/ ’bras nad gang yang sgrangs pa’i dbyibs dang che chung bye’u’i sgo nga tsam*).

129 Personal communications, Menpa Gyamtso (*rgya mtsho*), Taktasang Lhamo Kirti Monastery (*stag tshang lha mo kirti dgon*); Menpa Sangee Bohm (*sangs rgyas ’bum*), Qinghai Provincial Tibetan Medical Hospital Skin Department, July 2018.

internal body that have a proclivity to spread.¹³⁰ Earlier, we have discussed how the term “skin” in the *Four Tantras* refers to external skin as well as the superficial layers on organs: “Sites where *méwel* manifest include the skin and vital organs, specifically the heart.”¹³¹ The *Four Tantras* describes the *méwel* etiology as follows: “By means of diet, behavior, and non-human external influences (*gdon*), blood and *tripa* proliferate and *chuser* and heat are aggravated by *rlung* [to produce *méwel*].”¹³² Here, we see links to the six characteristics outlined above with aggravated *rlung*, blood, and *tripa* proliferation from the wound-derived etiology. Since skin conditions (*lpags nad*) in the *Four Tantras* are considered to arise from disturbances by microorganisms (*srin*); serous, interstitial and pre-lymphatic fluid metabolic imbalances (*chu ser*); harmful non-human external influences (*gdon*); and disruptions in the three default systems,¹³³ *méwel* has a particular association with the skin and superficial layers of organs.

From the biomedical understanding, skin cancer develops from abnormal cells in the skin and has the capacity to spread to other areas of the body. The three major types develop from the epithelia (squamous cell skin cancer [SCSC]), basal lamina (basal cell skin cancer [BCSC]), and melanocytes (melanoma). BSCS grows slowly and can damage surrounding tissue but is unlikely to spread to distant regions or result in death. It is often painless and may be shiny with blood vessels running over it or raised like an ulcer. SCSC is more likely to spread and has a hard lump with scaly top, but can also manifest as an ulcer. Melanomas are the most aggressive, starting as a mole that changes size, shape and color, has irregular edges and variegated coloring and can be itchy or bleed.¹³⁴ Each of these types can have a wound-like (ulcer) or burn-like appearance on the skin similar in description to *méwel*. Compared to *dréné*, even

130 G.yu thog yon tan mgon po, *Bdud rtsi snying po yan lag brgyad pa gsang ba man ngag gi rgyud*, 407: “Producing external burn-like wounds that spread” (*phyir byung mes tshig rma dang 'dra zhing mched*/).

131 G.yu thog yon tan mgon po, *Bdud rtsi snying po yan lag brgyad pa gsang ba man ngag gi rgyud*, 407: *gnas ni pags pa don snying mams la gnas*/.

132 G.yu thog yon tan mgon po, *Bdud rtsi snying po yan lag brgyad pa gsang ba man ngag gi rgyud*, 407: *rgyu rkyen zas spyod gdon gyis khrag mkhris 'phel/ chu ser tsha ba rlung gis bus pa'o*/.

133 G.yu thog yon tan mgon po, *Bdud rtsi snying po yan lag brgyad pa gsang ba man ngag gi rgyud*, 396: “Skin conditions are produced by the accumulation of *sin* and *chuser* in the body, along with a disturbance in *dön* and *duwa*” (*rgyu ni srin dang chu ser 'phel ba la/ gdon dang 'du ba 'khrugs pas lpags nad skyed*/), where *duwa* are the balanced forms the functional default systems, properly termed “*nyépa*” when experiencing dysfunction.

134 Sajjad Rajpar and Jerry Marsden, *ABC of Skin Cancer* (Malden, MA: Blackwell Publishing, 2008).

if “skin *dré*” were subsumed within “flesh *dré*,” *méwel* provides a more consistent skin-specific etiology in the *Four Tantras* and a skin cancer presentation of morphology and symptoms.

In *The New Dawn Compendium of Medicine*, Samten creates a new seemingly redundant category called “wound *dré*” (*rma ’bras*) in which he locates skin wounds of the limbs, trunk, face, neck, and so forth, to presumably provide a categorical link in *dréné* to skin cancer.¹³⁵ Additionally, he places *méwel* under skin illnesses (*pags pa’i nad*). This is an instructive modern move in shifting the nosology of *méwel* and delineating a separate category under *drétren* called wound *dré*. Samten omits internal *méwel*, such as that which affects the internal organs, from his depiction to present it as an exclusively skin-specific disorder, and minimizes its intensity to focus on its rash-like spreading forms. Thus, one can say that wound *dré* provides the territory onto which Samten maps biomedical conceptions of skin cancer, without distinctions for how to map different types based on the Tibetan diagnostic paradigm. However, the redundancy of adding “wound” to *dré* seems unnecessary to create a new category for skin cancer; and the re-characterization of *méwel* as a mild external skin condition facilitates his focus of a categorical collapse in linking cancer to *drétren* and recasts *méwel* accordingly. It is interesting to note that Samten’s reframing of *méwel* informs prevalent clinical diagnostics of *méwel* today, as mentioned above, for various biomedical *Herpes virus* clinical presentations.

9.2 Surya as a Dréné Cousin and Better Candidate for Many Carcinomas

In the *Four Tantras*, *surya*, a Tibetan transliteration for the Sanskrit term “sun,” indicates a disorder in which irregularly-shaped external or internal sores form with streaks or heterogeneous edges like the rays of the sun and tend to spread along channels and re-erupt in other regions of the body.¹³⁶ Such internal and external sores tend to ulcerate and leak pus, blood, and abnormal (literally, “putrid”) flesh.¹³⁷ Its etiology arises from excess proliferation of blood due to dietary and lifestyle conditions; blood quality disturbances due to injury, trauma, or improper venesection; contagious disease (*rims nad*); toxins; and excess

135 Bsam gtan, *Gso rig snying bsduṣ skya reṅgs gṣar pa*, 280: *nad rtags ni thog mar pags pa mthug po chags pa nas rim bzhin skrangṣ ’bur chen po don dang/ skrang po mkhregs shing ’bar ’bur yin par dkyil ngos nas rma khung rdol te dri ngan can gyi khrag ngan chu ser ’dzad med ’dzags te/ nyung ma ’khyags/*.

136 G.yu thog yon tan mgon po, *Bdud rtsi snying po yan lag brygad pa gṣang ba man ngag gi rgyud*, 408; Shes rab chos ’phel, ed., *Lhan skyes rma gso ba* [Coemergent Wounds Treatment] (Beijing: Mi rigs dpe skrun khang, 2011), 46.

137 G.yu thog yon tan mgon po, *Bdud rtsi snying po yan lag brygad pa gṣang ba man ngag gi rgyud*, 408.

heat in the channels that has not been properly therapeutically released. Such causal conditions lead to the development of poor blood quality and serous fluid imbalances that collect in the vital and vessel organs as well as the blood vessels, lymph vessels, and nerve channels. *Rlung* aggravation¹³⁸ compounds these processes, and the consequent swelling and pus lead to the formation of a *dré*-like growths.¹³⁹ *Surya* relates to the six characteristics of cancer in its *rlung* aggravation, proliferating *tripa*-derived blood abnormalities, and trauma- or pathogen-inflicted wound etiology.

Furthermore, as described above, *surya* arises from the spreading (*byer ba*) condition of nutritional essence metabolic disruptions like *dréné*, *méwel*, and *tren* of the blood vessels, lymph, and neural channels. Along with *méwel*, it specifically indicates the ability to spread throughout the body along these channels, which is not explicitly described for *dréné* or *tren*. *Surya* primarily affects the lungs, liver, stomach, colon, and kidneys, and specifically affects the skin (*pags pa*) and muscle (*sha*) constituents of the body, such as with skin cancer, and cancers of the superficial cell layers. Likewise, distinctly compared to *dréné*, *surya* explicitly enters and affects the vessels of the body, which provide an etiological relationship to cancers of the blood vessels, neural tissues, and lymph glands, such as lymphomas.

Here, we return to the concept of skin and muscle in the *Four Tantras* as also applying to layers of the vital and vessel organs, as well as external protective layer of skin, such as with epithelial and endothelial cells in the biomedical designation. As described above, epithelial cells are the outermost layer of skin, but also line cavities and surfaces of organs and blood vessels throughout the body.¹⁴⁰ Endothelium is a specialized form of epithelium which lines

138 G.yu thog yon tan mgon po, *Rgyud chung bdud rtsi snying po* [The Ambrosia Essence Smaller Tantra], in *Cha lag bco brgyad* [Eighteen Supplements] (Beijing: Mi rigs dpe sgrun khang, 2005), 534.

139 G.yu thog yon tan mgon po, *Bdud rtsi snying po yan lag brgyad pa gsang ba man ngag gi rgyud*, 408: *gyur tshul zas spyod gyis khrag 'phel dang/ mtshon khrag lus dang 'grams khrag gtar ma 'chun/ rims dug tsha ba rtsar babs ma gtar bas/ khrag nyan chu ser don snod rtsa mig 'dus/*.

140 Various types of epithelial cells occur. For example, simple squamous epithelium comprise the air sacs in the lungs, the lining of the heart, blood vessels and lymphatic vessels; simple cuboidal epithelium reside in the secretory glands and kidney tubules; simple columnar epithelium are ciliated tissues in bronchi, uterine tubes and uterus and smooth types along the digestive tract; pseudostratified columnar epithelium line the trachea and upper respiratory tract; stratified squamous epithelium line the esophagus, mouth and vagina; and stratified cuboidal epithelium comprise the sweat glands, salivary glands and mammary glands; among others (Sylvia Mader and Michael Windelspecht, *Human Biology* [New York, NY: McGraw-Hill Education, 2015]).

various blood and lymphatic vessels. Epithelial layers contain no blood vessels, so they must receive nourishment from the underlying connective tissue and the various substances diffused from the basement membrane.

From the physiological development of constituents in the *Four Tantras*, muscle arises from blood. Since skin is seen to cover muscle, a reasonable corollary would be muscle as the endothelial and underlying connective tissues (again, recall the “wrapping” function of muscle in the *Four Tantras*). Due to the abnormal growth of skin and muscle constituents of the external surfaces of the body, as well as vital and vessel organs, and blood, lymph and neural vessels, *surya* must be added to the set of diseases in the Tibetan medical canon onto which biomedical malignant and benign neoplasms are mapped, and may be the primary candidate onto which most carcinomas and adenocarcinomas map.¹⁴¹

9.3 *Leukemia and Nutritional Essence Metabolic Disturbances*

Leukemia has provided a stumbling block for many Tibetan physicians discussing how cancer maps into the Tibetan medical nosology and how we, as Tibetan physicians, understand and approach conditions of leukemia clinically. On one hand, many physicians assert that leukemia is merely blood *dré* (*khrag 'bras*), one of the classic types described in the *Four Tantras* mentioned earlier. However, the *Four Tantras* describes *dré* derived from blood (*khrag las gyur pa'i 'bras nad*) as primarily forming *dréné* of the breast (*nu ma*) and uterus (*mngal*). In describing the medicine compounding for treating *dré* derived from blood and *tripa*, the *Four Tantras* states: “[*Dré* derived from] blood and *tripa* [is treated with the orchid] *pushel-tsé*,¹⁴² *Rubia manjith*,¹⁴³ the three [sacred]

141 This is because, as described above, ninety percent of cancers arise from epithelial cells as squamous cell carcinomas and adenocarcinomas (Cooper, *Elements of Human Cancer*, 17). Interestingly, Samten does not include *surya* in any of the categories in the *The New Dawn* (Bsam gtan, *Gso rig snying bsdu s skya rengs g sar pa*, 1–16). This disease has eluded many Tibetan physicians with whom I spoke in India as well as in central and eastern Tibet, perhaps due to the unfamiliarity with organ morphologies affected by cancer that might present more as a *surya* condition. I speculate that Samten's motivation to leave out *surya* stems from an effort to streamline Tibetan nosology to provide one-to-one correlations with that of biomedicine, which is the method this article challenges.

142 *Coelogyne corymbosa* (*pu shel rtse*), *Dendrobium densiflorum* (*smyug pu shel rtse*). See Tshe ring nor bu, *Bod lugs gso ba rig pa'i skyé dngos sman rdzas sngo 'bum kun btus* [Comprehensive Collection of Tibetan Medical Biological Specimens] (Dharamsala: Men-Tsee-Khang, 2013), 391.

143 On *Rubia manjith* (*btsod*), see Tshe ring nor bu, *Bod lugs gso ba rig pa'i skyé dngos sman rdzas sngo 'bum kun btus*, 187. Species identification based on specimens used at Dharamsala Men-Tsee-Khang.

fruits,¹⁴⁴ pine resin,¹⁴⁵ licorice,¹⁴⁶ turmeric,¹⁴⁷ a *Berberis* species,¹⁴⁸ black juniper berries,¹⁴⁹ and common juniper berries.¹⁵⁰ Likewise, in the skin illnesses chapter of the *Oral Instructions Tantra*, it says: “The two yellows, *Saussurea lappa*,¹⁵¹ *dukmo-nyung*,¹⁵² and smoky mineral exudate treat blister conditions, vitiligo, rashes, and all skin conditions without exception.”¹⁵³ Here, “the two yellows” are the familiar turmeric (*yung ba*) and *Berberis* species (*skyer pa*), as found in the treatment for the blood-derived *dréné*. Thus, it might appear that from the treatment perspective, one would link *dré* derived from blood more to skin cancer than cancers of biomedical blood or bone marrow.¹⁵⁴

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- 144 On *Terminalia chebula*, *Terminalia bellerica*, *Embllica officinalis* (*a ru ra*, *ba ru ra*, *skyu ru ra*), see Tshe ring nor bu, *Bod lugs gso ba rig pa'i skye dngos sman rdzas sngo 'bum kun btus*. Species identification based on specimens used at Dharamsala Men-Tsee-Khang.
- 145 On pine resin (*shel ta* = Chi. *songxiang* 松香), see Dga' ba rdo rje, *Khrungs dpe dri med shel gyi me long* [Mirror of Crystal Pure Living Specimens] (Beijing: Mi rigs dpe skrun khang, 2011), 126.
- 146 On *Glycyrrhiza glabra* (*shing mngar*), see Tshe ring nor bu, *Bod lugs gso ba rig pa'i skye dngos sman rdzas sngo 'bum kun btus*, 345. Species identification based on specimens used at Dharamsala Men-Tsee-Khang.
- 147 On *Curcuma longa* (*yung ba*), see Tshe ring nor bu, *Bod lugs gso ba rig pa'i skye dngos sman rdzas sngo 'bum kun btus*, 283. Species identification based on specimens used at Dharamsala Men-Tsee-Khang.
- 148 On *Berberis* spp (*skyer pa*), see Tshe ring nor bu, *Bod lugs gso ba rig pa'i skye dngos sman rdzas sngo 'bum kun btus*, 82, 84. Species identification based on specimens used at Dharamsala Men-Tsee-Khang.
- 149 On *Juniperus indica* (*spa 'brum*), see Tshe ring nor bu, *Bod lugs gso ba rig pa'i skye dngos sman rdzas sngo 'bum kun btus*, 402. Species identification based on specimens used at Dharamsala Men-Tsee-Khang.
- 150 On *Juniperus communis* (*shug 'bru*), see Tshe ring nor bu, *Bod lugs gso ba rig pa'i skye dngos sman rdzas sngo 'bum kun btus*, 355. Species identification based on specimens used at Dharamsala Men-Tsee-Khang. G.yu thog yon tan mgon po, *Bdud rtsi snying po yan lag brgyad pa gsang ba man ngag gi rgyud*, 404: *khrag mkhris pu shel rtse btsod 'bras bu gsum/shel ta shing mngar yung skyer spa shug 'bru/*.
- 151 On *Saussurea lappa* (*ru rta*), see Tshe ring nor bu, *Bod lugs gso ba rig pa'i skye dngos sman rdzas sngo 'bum kun btus*, 310. Species identification based on specimens used at Dharamsala Men-Tsee-Khang.
- 152 On *Holarrhena floribunda*, *Wrightia tinctoria*, and *W. tomentosa* (*dug mo nyung*), see Tshe ring nor bu, *Bod lugs gso ba rig pa'i skye dngos sman rdzas sngo 'bum kun btus*, 340–41. Species identification based on specimens used at Dharamsala Men-Tsee-Khang.
- 153 G.yu thog yon tan mgon po, *Bdud rtsi snying po yan lag brgyad pa gsang ba man ngag gi rgyud*, 397: *ser po gnyis dang ru rta dug mo nyung/ dud pa'i lde gus shu ba bkra dang/ g.yan pa lpags nad ma lus sel bar 'gyur/*.
- 154 The way the Tibetan medical tradition understands blood (*khrag*) compared to biomedical understandings of blood is a topic that warrants a separate discussion beyond the scope of the present chapter.

Menpa Khyenrab Gyamtso,¹⁵⁵ former Vice Principal and one of the senior lecturers of Dharamsala Men-Tsee-Khang, with experience seeing patients in Europe, north America and throughout India, explained leukemia through the lens of “metabolic disruptions of the nutritional essence” and its spreading condition (*byer ba*), or *dréné*-producing variant. He said that although the *Four Tantras* may not specifically describe an illness with a one-to-one correlation with biomedical leukemia, one must think about how Tibetan medicine understands the formation of abnormal constituents in the body, and Tibetan medicine’s unique perspective on blood (*khrag*). He is a strong proponent of adhering to the Tibetan medical paradigm as presented in the *Four Tantras* and its commentaries—its distinct epistemology—and not dismissing it to privilege explanations more akin to biomedicine; although he also identifies mapping biomedical conditions into Tibetan medicine as important for collaborative discussions with science and biomedicine. He says that leukemia would be a classic manifestation of the spreading (*byer ba*) condition of “metabolic disruptions” because the genesis of healthy, life-sustaining blood (*zung khrag*) is not properly developed in the body. Thus, from a treatment perspective, we would need to treat the “metabolic disruptions” and the inability of the body to produce proper blood, which Tibetan medical physicians see as stemming from the liver (*mchin pa*).

An initial analysis might interpret leukemia in Tibetan medical terms as proliferation of the white constituents in blood (*khrag dkar 'phel ba*).¹⁵⁶ Since blood is developed from nutritional essence, and the fluid that becomes blood is not termed so until it transits through the liver and gains the proper constituents and qualities, the condition of deficiency of blood (*khrag zad pa*) in the *Four Tantras*¹⁵⁷ could be understood as an imbalance in the body, which impairs the capacity to produce proper healthy blood. The symptoms associated with a deficiency of blood are described as “slackening of the channels, rough skin, and a yearning for cold and sour foods.”¹⁵⁸ For both acute and chronic leukemia, common symptoms include excessive bleeding, easy bruising, frequent

155 Khenrab Gyamtso, personal communication, 2015.

156 See, for example, discussion in Tawni Tidwell [Rangjung Lhamo], “Phi lugs gso rig gi kan sar (Cancer) zhes pa'i nad rigs de bod lugs gso rig gi 'bras nad dang surya skran rigs gang la sbyar rung bar dpyad pa” [A Comparative Analysis: Mapping Biomedical Cancer into Tibetan Medical Etiological Categories], *Bod man slob gso dang zhib 'jug* [Tibetan Medical Education and Research Journal] 4 (2016): 98–113.

157 As described in the chapter on “Defining Characteristics of Illnesses” in the second part of the *Four Tantras* (G.yu thog yon tan mgon po, *Rtsa ba'i rgyud bshad pa'i rgyud phyi ma'i rgyud kha skong dang bcas pa*, 79–85).

158 G.yu thog yon tan mgon po, *Rtsa ba'i rgyud bshad pa'i rgyud phyi ma'i rgyud kha skong dang bcas pa*, 82: *khrag zad rtsa lhod lpags rtsub bsil skyur dang /*.

infections, joint/bone pain and tenderness, night sweats and fevers, enlarged spleen and lymph nodes, fatigue, loss of appetite, muscle weakness, shortness of breath, and weight loss. Thus, the symptoms for blood deficiency do not match those for leukemia.

Proliferation of bone marrow (*rkang 'phel*), as described in the *Four Tantras*, might also provide a likely strong candidate. Its symptoms are described as “a feeling of heaviness in one’s body from proliferation of vitality essence (*bcud*) throughout the whole body causing difficulty moving, sitting, flexing or extending; poor eyesight, and thickening and enlargement of bone heads and thicker regions at joint sections.”¹⁵⁹ Although “bone marrow proliferation” is a more likely candidate onto which to map leukemia from the biomedical etiological perspective, the associated symptoms do not encompass the breadth of the biomedical symptoms for leukemia nor the severity that, say, *dréné* would. These distinctions highlight the etiologic differences in each system.

A final category of blood proliferation (*khrag 'phel ba*) provides a likely association. The *Four Tantras* describes this condition: “Blood proliferation manifests as *méwel*, internal *dré*, spleen disorders, leprosy (*mdze*), *tren*, blood and *tripa* disorders, jaundice, gum illnesses, difficulty moving, and reddening of the eyes, urine, and skin.”¹⁶⁰ Here we see a theoretical framework for an underlying condition that drives the formation of both *dréné*, *méwel*, and *tren* and can provide a useful understanding for commonalities among these conditions, including leukemia, skin cancer, and lymphoma. Since leukemia rarely forms aggregations or masses, except secondary to accumulations at lymph nodes, it would not be considered a *tren* or a *dréné* from the Tibetan medical perspective. However, as Khyenrab Gyamtso identifies, here is the etiological link to “metabolic disruptions of the nutritional essence” and its spreading condition (*byer ba*), as a collection of related illnesses that includes *dréné* in the Tibetan medical epistemology and ontology.

159 G.yu thog yon tan mgon po, *Rtsa ba'i rgyud bshad pa'i rgyud phyi ma'i rgyud kha skong dang bcas pa*, 81: *rkang 'phel lus lci mig g.yung tshigs kha sbom*/. Further explained in Khro ru tshe nam, *Gso rig rgyud bzhi'i 'grel chen drang srong zhal lung* [The Great Commentary on the *Four Tantras*: Oral Instructions of the Sages] (Chengdu: Si khron mi rigs dpe sgrun khang, 2000), 257: *rkang 'phel ba'i rtags su lus yongs la bcud kyis khyab pa'i stobs kyis lus lci ba ste 'gro 'dug dang 'gul skyod la sogs pa dka' zhing/ mig g.yung ba ste gsal por mi mthong ba dang/ tshigs kha ste tshigs mdud kyi mgo bo rnam sbom zhing che bar 'gyur ba/*.

160 G.yu thog yon tan mgon po, *Rtsa ba'i rgyud bshad pa'i rgyud phyi ma'i rgyud kha skong dang bcas pa*, 80–81: *khrag 'phel me dbal khong 'bras mcher pa'i nad/ mdze skran khrag mkhris nad dang mig ser dang/ rnyil nad skyod dka' mig dang gcin lpags dmar/*.

9.4 *Lymphoma and Lymph Dré*

In the *New Dawn Compendium of Medicine*, Samten keeps the category of lymph illnesses (*rmen bu'i nad*) within the “Coemergent Wounds” (*lhan skyes rma*) section of illnesses to which *dréné*, *méwel*, and *surya* belong classically. However, he focuses on a new addition called “rapid-spreading infectious disease” (*gnyan nad 'khyam po*), taken from the description Desi Sanggyé Gyatso provides in the *Oral Instructions Supplement*. Samten focuses on the association with infection (*gnyan nad*), but also recognizes its potential for gaining a nature of chronic illness or mass accumulation, as with *dréné*. Here the classic signs of lymphoma are even described: swelling at lymph nodes and at joints; fevers, significant sweats, and ease of infection; lethargy, malaise, and weight loss; and itching. Samten even distinguishes *rlung*, *tripa*, and *béken* variants in this case.¹⁶¹ This etiologic link relates to the condition of abnormal blood proliferation in the case of leukemia, where an internal *dré* manifests in the lymph glands that at times forms actual *tren* or *dré*-like masses, and at other times remains in the antecedent condition.

However, the *Four Tantras* outlines an appropriate category within the lymph gland disorders chapter of lymph *dré*,¹⁶² as described earlier, which retains the same etiologic underpinnings of blood and *rlung* compounding metabolic disruptions, such as with *dréné*, *tren*, *méwel*, and *surya*. I argue that the classic category of lymph *dré* in the *Four Tantras*, with the broader context of nutritional essence metabolic disturbance, is a sufficient correlate for biomedical lymphoma. Though this lymphoma-lymph *dré* link appears to be a one-to-one relationship between the biomedical category and Tibetan medical category, it retains the contemporary epistemological and ontological distinctions of each respective tradition's units of analysis, pathways, and systems, such as the *nyépa* in the *Four Tantras*, and the larger etiological contexts. The infection addition of Desi Sanggyé Gyatso situates a subclass of lymph gland disorders related to infection but is unnecessary in the depiction of lymphoma.

10 Shared Commonalities with Biomedical Cancer and Neoplasms

The pathology of *dré*, channel *tren*, *méwel*, *surya*, and blood proliferation disorders engage several common processes central to the Tibetan medical understanding of similar disease origins and trajectories, specifically digestive

161 Bsam gtan, *Gso rig snying bsdus skya rengs gsar pa*, 321.

162 G.yu thog yon tan mgon po, *Bdud rtsi snying po yan lag brgyad pa gsang ba man ngag gi rgyud*, 409–11.

and metabolic processing and blockages; the relationship between digestion and the differential managing of “nutrients” (*dwangs ma*) and “waste products” (*snyigs ma*) specific to blood production-metabolism; and pathogenic relationships to these processes. Additionally, they all draw upon disturbances to nutritional essence metabolism, with compounding conditions of coarse and subtle levels of specific physiologic pathways disruptions, due to their connection to blood impurities and *rlung* aggravation.

Their etiology also provides convincing resemblance to the six defining characteristics for biomedical cancer. As cellular hyperplasia, which is recognized as the disturbed, pathological growth of cells,¹⁶³ which the term neoplasm denotes, biomedical cancer is understood to result from a set of mutations that produce oncogenes allowing a dominant gain in function and tumor suppressor genes inducing a recessive loss of function. Its origins are understood to be a complex array of layers deriving from genetic, environmental, social, psychological, dietary, and related factors. Oncogenesis and tumor formation are seen to be a multi-step and co-emergent process that generates these genetic alterations with multiple rate-limiting steps producing these incremental growth advantages, as we see in the compounding conditions that incite or diffuse each of the conditions in the *Four Tantras* presented.¹⁶⁴

Furthermore, it is interesting to note that the language of co-emergent wounds in the biomedical literature around cancer is prolific¹⁶⁵—even to the extent of a “genetic lesion.” A lesion is seen as circuit injury in which the cell must follow reprogrammed circuitry from the incurred damage and repair.¹⁶⁶ This might sound similar to the overarching category of “coemergent wounds” (*ghan skyes rma*) in which *dréné*, *méwel*, and *surya* are subcategories. The idea of multiple conditions coming together to form biomedical cancer might also sound familiar from the Tibetan medical perspective, since the use of the term “coemergent” (*ghan skyes*), again as in the name of this larger category, to describe the lesion and development of *dréné*, *méwel*, and *surya* is also common.

As Hanahan and Weinberg describe the six characteristics a cell must procure in order to become malignant, not all cancer cells acquire each characteristic

163 Mukherjee, *The Emperor of All Maladies*, 340.

164 Hanahan and Weinberg, “The Hallmarks of Cancer,” 57.

165 See for instance H. F. Dvorak, “Tumors: Wounds That Do Not Heal,” *New England Journal of Medicine* 315 (1986): 1650–59; J. W. Harper and S. J. Elledge, “The DNA Damage Response: Ten Years After,” *Molecular Cell* 28 (2007): 739–45; A. F. Hezel and N. Bardeesy, “LKB1; Linking Cell Structure and Tumor Suppression,” *Oncogene* 27 (2008): 6908–19; M. Schäfer and S. Werner, “Cancer as an Overhealing Wound: An Old Hypothesis Revisited,” *Nature Reviews Molecular Cell Biology* 9 (2008): 628–38.

166 Hanahan and Weinberg, “The Hallmarks of Cancer,” 66.

by the same chronology or mechanism.¹⁶⁷ Similarly, Tibetan medicine describes that the conditions that must assemble in order to produce *tren*, *dréné*, *méwel*, or *surya* can come in variable combinations and sequences. Much of the research on cancer has focused on cancer cells propagated in culture and dissected into molecular components; however, the biological reality of tumor formation shows that it is not just an isolated event driven by cell-autonomous processes. Instead, most tumors removed from a living person, including their metastatic outgrowths, are complex mixtures of several cell types within a tissue mass,¹⁶⁸ similar to the complex mass described as *dré* in the *Four Tantras* and its commentaries that are likened to a gnarled mass growing on a tree with a distorted aggregation of combined bodily constituent types (i.e., varied cells types). Although one type of constituent predominates the genesis of the *dréné* mass, the mass itself is a “whorl” of various bodily constituents that get aggregated. Thus, the characteristics needed to form masses would necessarily require different bodily constituent types to co-constitute the aggregation. For instance, “nutrients” develop “the objects that incur injury” (*gnod bya*), that is, the seven bodily constituents and three excrements.¹⁶⁹ Blood moistens, fat lubricates, bone supports and stabilizes, bone marrow transforms regenerative essence (*bcud*), the distilled vital essence required by the body for sustenance and growth, and the regenerative constituents that hold the reproductive seed in the womb.¹⁷⁰ Contributions from several of the bodily constituents are needed to generate an aggregation in the body for *tren*, *dréné*, *méwel*, *surya*, and the other mapped conditions because of the compounded etiology derived from the proliferation of improper blood and aggravated condition of *rlung*, which can theoretically affect all bodily constituents.¹⁷¹ The diagram below provides the correlated conditions from the *Four Tantras* and its commentaries in which I propose relate most closely to biomedical conceptions of cancer.

Such a mapping highlights the etiological and categorical similarities and distinctions between the two systems. As such, practitioners and researchers

167 Hanahan and Weinberg, “The Hallmarks of Cancer,” 66.

168 Hanahan and Weinberg, “The Hallmarks of Cancer,” 67.

169 G.yu thog yon tan mgon po, *Bdud rtsi snying po yan lag brgyad pa gsang ba man ngag gi rgyud*, 54: *de la dwangs mas gnod bya 'phel bar byed*. The “agents producing the harm” (*gnod byed*) are the three default systems.

170 G.yu thog yon tan mgon po, *Rtsa ba'i rgyud bshad pa'i rgyud phyi ma'i rgyud kha skong dang bcas pa*, 54: *khraḡ gis brlan sroḡ 'tsho sha yis g.yogs/ tshil gyis snum dang rus pas brten pa dang/ rkang gis bcud 'gyur khu bas mngal 'dzin byed/*.

171 G.yu thog yon tan mgon po, *Bdud rtsi snying po yan lag brgyad pa gsang ba man ngag gi rgyud*, 400.

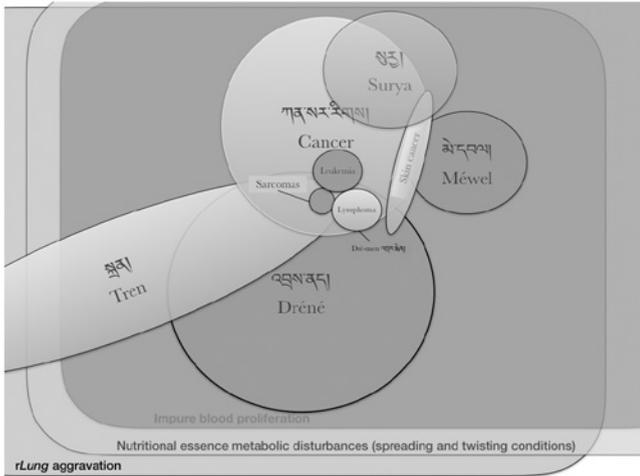


FIGURE 5.1 Biomedical cancer and correlating Tibetan medical conditions

from both systems can more explicitly dialogue on contributions in diagnostics and treatment from each approach.

10.1 Potential Contributions to Biomedical Conceptions of Cancer

From the biomedical understanding, it is not completely certain whether cancer cells have true autonomy—ancillary cells, such as fibroblasts and endothelial cells, have received little attention and may play an important role in the cell-to-cell (paracrine) and systemic (endocrine) signals.¹⁷² As highlighted above, cellular signaling is understood by contemporary Tibetan physicians to be controlled by *rlung* functions. Thus, excess, deficiency, and abnormalities in such signaling would likely have *rlung* imbalance origins as described in the *Four Tantras*. The mapping between Tibetan medical and biomedical disease etiologies allows for contributions from the Tibetan medical paradigm to inform biomedical analyses of cancer development. From the Tibetan medical perspective, these overlooked cells in the biomedical paradigm could potentially play a critical role in cancer modulation vis-à-vis the etiological links I have outlined above between cancer and *dréné*, *tren*, *mével*, *surya*, and the various related metabolic disturbances, as well as the high association of *rlung* activity with that of the different subtle signaling pathways, which would correlate to these aspects of the neuroendocrine system. Thus, I argue that biomedical physicians could potentially benefit from considering the Tibetan

¹⁷² Hanahan and Weinberg, “The Hallmarks of Cancer,” 59.

medical insights of these disorders highlighted here by placing greater attention on these overlooked cells and the role they may play in cancer genesis. From a treatment perspective, calming the *rlung* would have an intimate relationship with the continued incitation of growth among the cancer cells, which has been seen in the Tibetan medical treatments of cancer reviewed by Bauer-Wu and colleagues.¹⁷³ Furthermore, inflammatory cells may be assisting cancer cells rather than suppressing them.¹⁷⁴ This has yet to be studied well.

Likewise, the Tibetan medical approach of supporting proper blood generation and maintenance of normal bodily constituents may contribute to modes of managing angiogenesis in the early stages of cancer development. From what I have outlined above, Tibetan physicians' treatment of poor blood (*ngan khrag*) could be a critical target therapy in tumor treatment and suppression. The relentless quality of dominating the body's resources gives cancer the characteristic of insatiability in nutrient acquisition. Supporting proper nutritional essence metabolism from the Tibetan medical perspective is a target intervention to prevent the development of this defining characteristic that mobilizes cancer. Furthermore, since apoptotic pathways are still operative in cancer cells, Tibetan treatments used for cancer might restore such pathways through *rlung* treatments, as described above, and contribute to how etiological processes driving biomedical cancer might be viewed through the lens of the *Four Tantras*.

11 Conclusion

In this paper I have argued that *dréné* is not cancer, and *tren* are not synonymous to biomedical neoplasms. To conflate either of the two poses a serious threat to the etiological lenses with which each medical system sees the body. Many cancers can be *dréné* and vice versa; many neoplasms are *tren*, and vice versa. However, *méwel*, *surya*, and abnormal blood proliferation, and the related nutritional essence metabolic disturbances in the *Four Tantras* and its prominent commentaries provide a wider landscape onto which biomedical benign and malignant neoplasms map.

173 Bauer-Wu et al., "Tibetan Medicine for Cancer," 502–12.

174 Cordon-Cardo and Prives, "At the Crossroads of Inflammation and Tumorigenesis"; L. M. Coussens et al., "Inflammatory Mast Cells up-Regulate Angiogenesis during Squamous Epithelial Carcinogenesis," *Genes and Development* 13, no. 11 (1999): 1382–97; J. D. Hudson et al., "A Proinflammatory Cytokine Inhibits p53 Tumor Suppressor Activity," *The Journal of Experimental Medicine* 190, no. 10 (1999): 1375–82.

In conclusion, in order to facilitate discussions of various conditions between practitioners of Tibetan medicine and Euroamerican medicine, it is imperative to retain the nosologies of each medical tradition with their attendant epistemologies, such that the collapse of categories does not jettison the very paradigmatic and unique tools that Tibetan medicine can offer to the diagnostics and treatment of some of the most devastating illnesses of our time. By translating cancer as *drétren*, I argue that the epistemology based in the *Four Tantras* that Tibetan medical practitioners engage is lost, namely the view of how the mind and body integrally interrelate, the development of disease from the mental affliction roots that drive the three default systems, the role of digestive and metabolic function in the formation of all of the bodily constituents, and the relationship of the three default systems with each organ, bodily constituent, and excrement—as well as how each of these factors relate to diagnostics and treatment. Collapsing cancer into *dréné* would be like collapsing the immune system and the neuroendocrine system into understandings of *rlung*.

Differences in evidence according to those implementing contemporary epistemologies rooted in each tradition's intellectual history must be recognized. For example, Menpa Sönam Wangdü cautions Tibetan doctors against claiming to “cure” cancer since the measure for curing cancer would be not a single metastatic cell left.¹⁷⁵ However, this might not be the case for Tibetan medicine—if the condition is under control (in balance, so to speak) for the rest of the person's life, there still may be abnormal cells and tissues present without dysfunction or life threat.¹⁷⁶ The same holds for pathogens (*srin*, *srin 'bu*),¹⁷⁷ like viruses and bacteria. Tibetan medical practitioners might treat a condition but not eradicate populations of the pathogen. Euroamerican medicine practitioners are beginning to appreciate this approach. For example, a cutting-edge treatment for melanoma is done through bolstering the immune system exclusively, which also does not focus on eradication of metastatic cells, but boosting the body's own physiologic controls of proper cell production and elimination of abnormal cells.¹⁷⁸ Likewise, our understanding of the microbiome shows that eradicating populations of bacteria are not ideal in treating disease. Like the 84,000 *sin* (*srin*) that reside in our body,¹⁷⁹ which help digestion, increase bodily strength, and facilitate a healthy complexion, I am encouraged to see this Euroamerican medicine-Tibetan medicine link vis-à-vis

175 Czaja, “The *Four Tantras* and the Global Market,” 276.

176 Actually, this approach is seen increasingly with some new biomedical perspectives on treating cancer. For example, see M. W. L. Teng et al., “Immune-mediated Dormancy.”

177 See fn 37 for an explanation of this term.

178 See MD Anderson Cancer Center, “Immunotherapy: Research Platform for the Moon Shots Program”; for more on this approach.

179 See for instance, Czaja, “The *Four Tantras* and the Global Market,” 289, n. 25.

recent microbiome research. Treating the body like a micro-ecosystem and returning balance provides a more optimum solution to health across the life course. Allowing for mapping approaches that encourage practitioners of each system to retain their distinct current epistemologies, etiologies, and nosologies is important in order to facilitate fruitful conversation between Euroamerican and Tibetan medicine, and for developing cogent comparisons of beneficial treatments and approaches for serious illness.

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