



Abstracts of all Speakers

Partha Basu, M.D., Ph.D.

Challenges of integrative oncology in cancer prevention, therapy and survivorship and research opportunities in LMICs

Abstract: Integrative oncology is an inter-disciplinary patient-centered approach to integrate complementary and alternative medicine (CAM) with conventional oncology care. The low- and middle-income countries (LMICs) have disproportionately high cancer burden. With <5% share of the global resources spent against cancer these countries account for 80% of the disability-adjusted life-years lost to the disease. LMICs need to prioritize cancer prevention, since 40% of the LMIC cancers are attributable to modifiable risk factors. Cancer prevention needs multi-faceted approach – minimizing exposure to harmful substances, preventing infectious causes, providing safe work environment and mobilizing community to adopt healthier lifestyle. Research is needed to further explore the positive impact of mind-body interventions in reducing stress and obesity, with consequential reduction in cancer risk. It is critical to study the factors related to successful integration of CAM to mainstream promotive healthcare, taking advantage of an individual's faith on CAM as a holistic care and CAM practitioners' passionate interest in health promotion. Traditional healers in LMICs are often blamed for delayed cancer diagnosis. A synergetic relationship can be developed by educating them and making them part of navigation and care continuum. More scientifically validated evidence is needed on the role of natural products in improving survival of cancer patients when administered with conventional therapy. The often-neglected part of cancer care in the LMICs is the quality of life, which is heavily affected by anxiety, depression, insomnia, fatigue and gastrointestinal symptoms during and after treatment. Yoga, Acupuncture and other complimentary practices can address these unmet needs but require rigorous evaluation.

Lorenzo Cohen, Ph.D.

Evidence-based Applications of Integrative Oncology in Global Health

Abstract: Dr. Lorenzo Cohen will discuss the current cancer epidemic in our society and around the world as countries adopt a western lifestyle. He will present the evidence behind cancer as mainly a lifestyle and environmental disease and how to lower your risk of cancer and improve outcomes for those with cancer, starting with one's own lifestyle. Dr. Cohen will present the most recent scientific evidence demonstrating the link between behavior, lifestyle, the environment and cancer and how this empowers us to create change in our lives to lower our risk of cancer and influence outcomes for those with cancer. The unique challenges facing low-and- middle-income countries will be addressed as they relate to cancer screening, prevention efforts, and lifestyle interventions. The evidence supporting the use of complementary medicine approaches such as

mind-body practices, acupuncture, massage, and more to help manage symptoms and side effects will be discussed.

Geetha Gopalakrishna Pillai, M.D. (AY)

Use of Traditional Medicine for Cancer Patient Management and Treatment in LMICs

Abstract: In LMICs integrative oncology has two parallel possibilities: (1) as a clinical modality and (2) as a health system strategy. At present, the clinical and societal goals of integrative oncology are focused in the areas of (1) Cancer symptom (mostly pain) management, (2) Improving Cancer therapy compliance (mitigating cancer therapy side-effects), and (3) Improving life quality of cancer patients and survivors. LMICs with Traditional Medicine (TM) as part of its cultural and social fabric and with substantive skills and resources invested in TM, can adopt integration of TM as a strategy to effectively develop a holistic approach to cancer care, which may will allow them to reap better health outcomes. LMICs should build resilient policies and health systems by integrating the resources of TM available with them to establish programs which shall support cancer screening, early detection, preventive interventions, and evidence based and appropriate use of TM in cancer patient care and management, respecting patient's choices and rights. In such settings integrative oncology shall play its role from the PHCs onwards, as opposed to the current scenario, where it is a specialty, mostly at technology and cost intensive higher centers of healthcare. Evidence as considered in Evidence-Based Medicine (EBM) is and should remain the same for all settings of healthcare. Nevertheless, importance given to the type of evidence may vary depending on the setting. For integrative medicine as a clinical modality, good evidence may rely on the metanalysis of outcomes of several double-blind randomized control trials (RCTs). In an LMIC, which engages TM as a resource in the holistic management of cancer, the combined outcome of few "country specific implementation research" projects would be more important. These diverse possibilities in integrative oncology based on the desired outcomes necessitate, appropriate training programs for specific skill set development among available human resources and specific regulatory policies, based on each country's existing policies, infrastructure, and resources.

Carlos Jose Andrade, M.D.

Challenges and clashes of Worldviews and circles of influence of western medicine and traditional medical systems

Abstract: One of the common challenges both to Western Medicine and Traditional Medical Systems is to create collaborative manner to in partnership achieve the UN Sustainable Development Goal (SGDs) goals. "Good health and well being" is one of the 17 goals to be pursued in the current decade. Different worldview, diverse philosophical and cultural concepts cannot be seen as barriers for the occidental and traditional medical systems to collaborate for health promotion, disease prevention and cancer control.

To pave the way for the harmonization among different beliefs, cultures and medical systems, we must develop an openminded and not skewed science that investigates the best and most opportune ways to promote health, prevent diseases, and offer access to the entire line of care including the end-of-life.

Taking into account the populational distribution in the world with a high concentration of people in the zones of low- and middle-income countries and the expected numbers of new cases of cancer, also projected with greater prevalence in these regions, we realize the great potential resulted from the collaboration between the traditional and occidental systems.

From the interaction between Western Medicine and Traditional Medical Systems, it should be established a methodology that not only attests the techniques used on evidence-base levels but also investigates the base from which these techniques arise. The challenge to implement cancer control, especially in developing countries, relies on, at the same time, expand care system, carefully incorporate new technologies and more emphatically act on cancer prevention considering lifestyle that are present in traditional care systems.

Recognizing that any ideal Health System must be Preventive, Predictive, Personalized and Participative, we establish the foundations for collaborative dialogue between the West and the East, seeking to bring together the best of each vision, creating a new approach in the path of science to reduce the human suffering in a sustainable way.

Bhushan Patwardhan. Ph.D., FNASc, FNAMS

Integrative Cancer Care for Prevention and Treatment: Avoid clashes and strengthen overlapping areas of modern and traditional systems

Abstract: Cancer cannot be controlled merely by discovering powerful drugs unless the root causes are controlled. Cancer cannot be effectively controlled unless healthy lifestyles and behavioral modifications are adopted by people. Cancer cannot be treated merely by addressing the growth of tumor mass but needs to correct reasons of malignancy with holistic consideration involving body and mind. Ayurveda approach is gentle unlike aggressive ‘war against cancer’ with cytotoxic drugs. It involves training and strengthening normal cells to take over the malignant. Ayurvedic therapeutics involve drugs, diet, and lifestyle advice as a part of *Swasthavritta*. In addition, body cleansing detox procedures known as Panchakarma are also used. *Panchakarma* treatments are actually sophisticated, physiological interventions to promote health, and prevent and treat diseases. They can modulate gut microbiota and have stimulating effects on the enteric nervous system. For effective management of cancer, it is important to integrate biomedicine, Ayurveda, and Yoga. This talk will also discuss role of Ayurveda botanicals in cancer treatment especially as therapeutic adjuvants by improving immunity, countering myelosuppression, and modulating drug transporters.

Jennifer Ligibel, M.D

Research and evidence-based integrative oncology for cancer prevention and treatment

Abstract: The application of integrative therapies in the care of cancer patients is typically based on historical practices and clinician experience. In recent years, there has been increased attention to the development of an evidence base for the use of integrative treatment modalities in oncology settings. A few moderately-sized randomized clinical trials have demonstrated benefits of integrative therapies, especially exercise and acupuncture, in mitigating side effects of cancer treatments and improving quality of life in cancer patients during and after active treatment. However, progress in this field has been limited by heterogeneity of study designs, limited standardization of treatment protocols, lack of active comparators, heterogeneity of outcome measures and small sample sizes. This lecture will address these challenges and discuss the development and implementation of integrative oncology interventional studies in cancer populations.

Karen Mustian, PhD, MS, MPH, ACSM, FSBM

Phase III Randomized Clinical Trials Testing the Efficacy of Yoga in Cancer Symptom Management

Abstract: Significant headway has been made in identifying and treating toxicities and side effects from cancer and its treatments. Improvements in surgery, radiation therapy, chemotherapy, and hormone therapy have increased the number of cancer survivors and augmented the quality of their longer lives. Modern innovative therapies show tremendous clinical potential; however, they will inevitably be accompanied by unique, unpredictable, extremely variable, and potentially more severe and more troublesome toxicities and side effects in some patients. Cancer control research focused in symptom science remains among the most important work we will do during the next decade in the field of oncology. Dr. Mustian will share research from her large phase III randomized controlled trials testing the efficacy of yoga for treating insomnia, fatigue, cognitive impairment, pain, arthralgia, anxiety and other toxicities among cancer survivors. These studies were conducted via the NCI-funded University of Rochester Cancer Center Community Oncology Research Program Research Base and in partnership with community oncology practice sites across the United States. Data suggest yoga is an effective treatment for these toxicities and side effects and that clinicians should recommend it as a viable therapeutic option for their patients.

Carla Holandino Quaresma, Ph.D.

The importance of research and scientific evidences to support the use of natural products as antitumoral agents.

Abstract: In Brazil, the Traditional and Complementary Medicine, or Complementary Alternative Medicine, is called as “Integrative and Complementary Practices”, and they are regulated by a specific legislation, published in 2006 year. The research and development of Integrative and Complementary Practices are distributed around our country, and at Federal University of Rio de Janeiro, our team is developing different research strategies with *in vitro* and *in vivo* models in order to contribute with the mechanisms of action involved with antitumoral properties of natural products. The antitumoral properties of Brazilian herbal drugs (*Orbignya 4omponen*, *Piper cabralanum*, *Passiflora 4omponent*, *Euphorbia tirucalli Lineu*) have been investigated by different experimental models. Also, the bioactive 4omponents identification is imperative to increase the use of natural products in medicine. The phytochemical analyses, based on HPLC, ultra-high resolution and accuracy of mass spectrometry, allow the identification of complex plant mixtures without prior extraction or separation steps. Besides, the use of multivariate statistical analysis using Partial Least Square Discriminant Analysis, applied in metabolomic studies, enables analyses of complex mixtures at the molecular level. An in-depth characterization of the compounds responsible for chemical discrimination is very important to provide strong scientific evidences for the use of natural products in the integrative oncology.

Chrisna Gouws, Ph.D., Pr.Sci.Nat.

From traditional African medicines to a commercial cancer cure, the need for innovative research

Abstract: Africa has an enormous biodiversity, with more than 5 000 species traditionally used as medicine. African traditional medicine (ATM) is reportedly one of the oldest medicine systems, but it is poorly documented. Although the World Health Organization supports the use and integration of ATM and scientific publication on ATM has dramatically increased, the majority of medicinal plants from the continent remains poorly studied and reported. A lack of treatment

validation and commercially available treatment development also continues to plague the African continent. This could be due to the general approach of studying isolated phytochemicals and single chemical entities, instead of the complex mix of phytochemicals present in the treatments as used traditionally. Furthermore, the continued lack of collaboration between traditional health practitioners and scientists are to the detriment of the research. The models used to study ATM are also a hurdle, since pharmaceutical and biological *in vitro* evaluations are usually performed in two-dimensional mammalian cell cultures. These models have extensive shortcomings and reduced physiological relevance. We therefore use more advanced cell culture models such as three-dimensional cell cultures to better mimic cancer cell behaviour *in vivo*. Species investigated for anticancer activity include *Sutherlandia frutescens*, *Xysmalobium undulatum* and *Aloe ferox*.

Susana Fiorentino, Ph.D.

Phyto therapy and anti-tumor immune responses

Abstract: Our investigation is focused on the research of non-aggressive therapies that allow for tumor destruction, microenvironment modulation and immune response activation. Plant extracts are ideal for this, thanks to the synergy of their components and their low toxicity. With this goal, we have established a platform to obtain extracts and fractions and characterize the chemical composition of at least 35 cultivable Colombian plants, which present interesting biological activities tested by a series of screening test to approach these questions. Until now, we have worked on two plants, *Petiveria alliacea* (Anamú) and *Caesalpinia spinosa* (Dividivi), for which we have shown their antitumor activity and have partially elucidated the molecular mechanisms. These biological activities are exerted together by the complete extract, but not by the isolated compounds (unpublished data). The Anamú's extract is more active on breast cancer tumor models and on primary leukemic cells from AML patients (in preparation), while the Dividivi's is more active in breast cancer and melanoma. For both Anamú and Dividivi we have observed the induction of immunogenic death signals (calreticulin, ATP, HMGB1) (and unpublished data). For a good anti-tumor activity exerted by the plant extracts, the presence of a functional immune system seems to be required. These extracts can act in a synergistic or antagonist way to primary human leukemia cells which have also been treated with different chemotherapeutics. Moreover, the use of natural antioxidant products has been promoted to prevent the appearance of tumors. We have showed that the preventive use of the Dividivi extract in healthy animals, predisposes them to a rapid and aggressive growth of the tumor that was subsequently transplanted, apparently due to the induction of a pro-inflammatory environment. This contrasts greatly, with its antitumor capacity when used once the tumor is established and even when the tumor develops exponentially. We have just finished the phase I clinical study of the standardized extract of Dividivi in healthy individuals and we will begin the phase II study as soon as it is approved by the ethics committee.

Pamela Weathers, Ph.D.

***Artemisia annua* as a benign, low cost alternative against artemisinin-susceptible cancers.**

Abstract: Artemisinin (AN), produced naturally in *Artemisia annua* L., has anti-cancer activity. Artemisinin delivered as dried leaf Artemisia (DLA) is about 40x more bioavailable than as a pure drug and with broad distribution across many tissues. As shown in rodents and humans, DLA is also efficacious against malaria and other infectious diseases. It was not known, however, if DLA would work as well as artemisinin in a cancer model. DLA extract (DLAe) and artesunate (AS) efficacy against nonsmall cell lung cancer (NSCLC) was compared in 3 NSCLC cell lines, a non-cancerous human fibroblast line, and in 2 xenograft murine models with *per os* delivery. DLAe

was equal to or better than artesunate (AS) at inducing cytotoxicity in all 3 NSCLC cell lines, inhibiting cell migration, and inhibiting tumor growth in 2 NSCLC xenograft murine models. There was no adverse effect on normal cells. This was the first study demonstrating efficacy of DLA and mechanistic differences in DLAe vs. AS, against NSCLC cells. DLA has no adverse effects in humans even over 7d treatments and is also inexpensive. Compared to AS and traditional cancer therapeutics, DLA may provide a more benign, low cost alternative oral therapeutic for patients with NSCLC.

Li Feng, MD

Applications of Traditional Chinese Medicine

Abstract: The application of TCM theory of "preventive treatment of disease" : prevention before disease onset, rescuing disease in its germination, preventing disease from exacerbating, regulating after disease cure, and prevention disease recurrence".2.Treatment: The combination of Chinese medicine and acupuncture with surgery, radiotherapy, chemotherapy, targeting and immunotherapy can reduce toxicity and increase efficiency. 3. Rehabilitation: Chinese medicine and acupuncture treatment can help the recovery of cancer patients. Some Western doctors gave Chinese OTC medicine prescription without following accurate syndrome differentiation and invalid effect can be predicted, which affects the positive evaluation of Chinese medicine. Some Chinese medicine practitioners take radiotherapy and chemotherapy as the main treatment ways with low chance of the utilization rate of Chinese medicine and acupuncture. Current opportunities: TCM has gradually formed a complete medical system in thousand years of clinical practice. If it can be well combined with modern research and experimental methods, many great original findings can be expected. Some major difficulties and challenges: 1.How to use modern research methods to standardize and internationalize Chinese medicine is complicated and difficult. 2.How to find an effective way to develop targeted drugs from effective Chinese medicine is still facing great difficulties. 3.The lack of large database in TCM.

Yufei Yang, M.D., Ph.D.

The Role of Traditional Chinese Medicine in Comprehensive Treatment of Colorectal Cancer

Abstract: Dr Yang will introduce TCM evidence-based research and clinical practice specifically for colorectal cancer in China. She will also talk about integrative oncology practice during COVID-19 in China. By pointing out existing challenges in this field, we will encourage a discussion on international collaborations and communications on this topic.

Wei Hou, M.D.

Integrative Oncology Research Opportunities at the China Academy of Chinese Medicine Sciences

Abstract: The Oncology Department of Guang'anmen Hospital, China Academy of Chinese Medical Sciences (CACMS) was created in 1963, it is one of the most-respected centers devoted exclusively to cancer patients' care, research, education, and prevention through TCM in China. Since 1963, more than 2 million patients have turned to the hospital for cancer care. Each patient receives individualized treatment focused on using the latest advances Western medicine and TCM

to develop safer, more effective treatments on a case-by-case basis, including traditional herbal formula, acupuncture, rehabilitation training, and medicated bath which have been successfully integrated with modern medicine. As the national TCM cancer center, our focus is looking for high levels proof of evidence-based medicine in cancer treatment using TCM. The National Tenth Five Year Program "a double-blinded controlled study of TCM on advanced stage non-small cell lung cancer " has shown that an integrated group with Western medicine and TCM can prolong the median survival time of patients compared to Western medicine alone (P=0.0118). We have successively undertaken over 10 national level projects within 5 years. Oncology Department is also approved as the clinical pharmacological base of TCM by the Ministry of Health, P.R. China, and undertakes the preclinical study and the re-evaluation of various kinds of new anti-cancer drugs of TCM.

Narendra Bhatt, M.D.

Exploring Ayurveda for research contributions to clinical oncology and new therapeutics in cancer care

Abstract: Ayurveda is rich in clinical information, diagnostics, prognostics and understanding of causative factors of illnesses. It offers a wide range of therapeutics comprising of products and ingredients of natural origin based on its own therapeutic rationale.

Enrichment of clinical knowledge is desirable for better cancer care. It will be advantageous to identify, and study clinically collated cancer conditions based on Ayurveda and to examine potentials of therapeutic solutions in the light of advances in biological or molecular pathways.

The multi-target approaches as preferred treatment in different types of cancers have opened up new avenues to identify broader biological targets. The Ayurvedic concept of *rasayana*, rejuvenation could further be explored for immunotherapeutic gains.

Vast knowledge base of products and ingredients of natural origin with clinical relevance based on synergistic principles offers several opportunities. These include 1) Studies of natural ingredients and its constituents used in cancer care, 2) Compound formulations or dosage forms used in cancer care for development of new approaches to address specific cancers or clinical conditions, 3) Development of different approaches in cancer care and treatments and 4) discovery of new anti-cancer drugs.

Clinical and therapeutic experiences with Ayurveda as observed for prevention of drug toxicity, protection in radiation or postsurgical treatments, non-recurrence and palliative care are required to be examined for their wider interpretation and applications.

Ram Manohar, M.D.

Ayurveda in Cancer Care in India

Abstract: Early detection and prevention of cancer (primary and secondary) as well as compliance with conventional treatment protocols for cancer care are the main challenges in the effective management of cancer in India.

Cancer patients seek care from Alternative and Complementary Medicine practitioners for various reasons. Ayurveda, the indigenous health care system of India is predominantly used by cancer patients presenting with different types of cancers in varied stages of disease progression. These interventions are administered either as standalone or adjuvant medications concomitant to western medicine treatment. The outcomes of such usage are underreported or not published. Lack of information regarding drug herb interactions and rigorous reporting of treatment outcomes continue to keep oncologists and decision makers skeptical about safety and efficacy of Ayurveda hindering efforts in integration of the two systems.

However, need for co-operation between Ayurveda and Conventional Medicine is recognized and there are cross talks between both the systems and Integrative Ayurveda Oncology (IAO) programs have been initiated in a few institutes in India. Projects like 'Documentation, Validation, Analysis of unpublished data of Ayurveda interventions in cancer by practitioners/ institutes', 'Systematic reviews on published data', 'Clinical studies in Integrative oncology' and the like have been initiated. At the point of care, there are Ayurvedic physicians caring for cancer patients and also in rare instances, we see modern oncologists treating cancer patients with Ayurvedic medicines or supporting the use of such interventions for cancer management in both individual practice and institutional settings. This talk will provide an overview of the ground realities and challenges in developing Integrative Oncology in India.

Ricardo Ghelman, M.D., Ph.D.

Abstract: Challenges and Opportunities Integrative Oncology Research in Brazil and LMICs

The three main fields of Complementary Medicine need proper integration with conventional oncology: Natural Products, Non-pharmacological Complementary Therapies and Complex Medical Systems.

Method: A survey of services in relation to the lines of research in these three domains was implemented.

Results: The challenge of integration in the first field corresponds to the pharmacological interactions between complementary and conventional products such as adjuvant treatment with Mistletoe; in the second field the challenges encountered are the new models of multimodal complementary approaches included in the National Policy of Integrative and Complementary Practices of the Brazilian Ministry of Health, such as music therapy and meditation for patients with cancer and in the third field the challenges of integration come from the dialogue between traditional diagnostics such as Chinese medicine, ayurvedic and/or anthroposophic with conventional cancer diagnosis. We will present some specific cases from this perspective.

Carlos Jose Andrade M.D.

Brazil Experience on Integrative Oncology

Abstract: Brazil has been building a process of insertion of unconventional practices for the last 35 years, at the time first with homeopathy, in its public health care network. In 1986, an agreement signed between the Ministry of Health, the State Health Department of Goiás and an Indian Institution, sought to offer Ayurveda training to doctors, nurses, pharmacists and agronomists, initiating the implementation of Ayurveda in the state public network of Goiás. These and other initiatives culminated in the creation of a National Policy of Integrative and Complementary Practices in the Unified Health System (PNPIC) in 2006. Initially contemplating Traditional Chinese Medicine and Acupuncture, Homeopathy, Phytotherapy and Social Thermalism / Crenotherapy this policy was updated in 2017, including several other therapeutic techniques in the Unified Health System. The National Cancer Institute has for many years incorporated acupuncture as a complementary technique to the treatment of pain. A integrative care center was created 3 years ago, introducing the practice of Mindfulness in the institution for health care workers and also in the pediatric service for parents, health professionals and also children during the hospitalization period. The benefits achieved by these initiatives justify facing the challenges for maintaining these programs. In addition to patients and their families subjected to high levels of stress, health professionals are a population at risk for burnout and should be included in stress reduction programs. It is expected that initiatives like these will also have a positive impact on the

preservation of the workforce and in the improvement of the assistance offered to patients and family members.

Paulo Caceres Guido, Pharm.D.

Challenges of the Use of Traditional & Complmetarty Medicine in Cancer in Argentina and other Latin American Countries

Abstract: In most Hispano-American countries, including Argentina, traditional and complementary medicines are widely used in patients with cancer, either to treat the disease itself, to control the symptoms, or to moderate the adverse events associated with antineoplastic therapy. In Argentina and Uruguay these medicines are used in around 90% of cancer patients (50% of Argentinian children). Health professionals often do not even check if patients are using them. The most frequent are religious-based practices (“*curanderismo*”: catholic-Christian, and shamanisms: indigenous), energy healing (reiki, touch), nutritional supplements, and medicinal plants. Although usually they are not strictly prohibited, they are not common options for oncology patients in formal health centers. Therefore, they are more widely used in outpatients. It is certainly not possible to know what their clinical effects are, as there is very little evidence regarding their safety and efficacy. Both in Argentina and many Latin American countries, the vast majority of research (>99%) related to “non-conventional” therapies in cancer is based on the study of plants, native or exotic, in the context of preclinical trials. These investigations are coordinated at universities and research institutes, and, to a lesser degree, at private or public health centers, working independently or cooperatively. In Argentina, although many of these studies are published in peer-reviewed international scientific journals, they rarely reach the clinical level. Formal research structures and national health and research policies of Hispano-American countries do not generate significant incentives to carry out long-term and high-impact studies in this field. Based on the high frequency of use of these practices in oncology, it seems necessary that their real effects (therapeutic and toxic) be known more deeply through properly conducted research studies. This way, considering the concept of integrative medicine, it might be possible to improve patient care and optimize therapeutic results

Natalia Sofia Aldana, M.D., MSc

The TCIM Americas Network: strengthening research in integrative oncology through collaborative work

Abstract: *Background:* The Traditional, Complementary, and Integrative Medicine Network for the Americas (TCIM Americas Network) is a collaborative initiative, created with the objective of interconnecting several stakeholders involved in the formulation of policies, regulation, training, promotion, practice, use and research of TCIM in the Americas. The Network is responsible for the content and development of the Virtual Health Library on Traditional, Complementary, and Integrative Medicine (VHL TCIM), with the technical support from BIREME/PAHO/WHO.

Aim: The main aim is to develop a common agenda and advance in the integration of TCIM in healthcare systems and services according to each national context, as well as strengthen research in TCIM.

Results: The TCIM Americas network has been working on identifying the actors involved in the field of integrative oncology in Latin American countries, both in clinical practice, research and education, with the idea of promoting cooperation between them. For example, this work was useful to gather information from LMICs countries and to set up this conference. In addition, the Network has been working with the Brazilian Academic Consortium and the WHO Collaborating

Centre on Traditional and Complementary Medicine- EsSalud Peru in the development of a virtual course to strengthen research capacity in TCIM, including Oncology Integrative.

Ricardo Ghelman, M.D., Ph.D.

The role of the Brazilian Academic Consortium of Integrative Health advancing Integrative Oncology Research

Abstract: The National Policy of Integrative and Complementary Practices of the Brazilian Ministry of Health was instituted in 2006 and has been expanding in Public Health to include a greater number of complementary and integrative approaches, especially in Primary Care. In recent years, the area of Traditional, Complementary and Integrative Medicine has been expanding at the level of high complexity of hospital oncology services. The Brazilian Academic Consortium of Integrative Health (CABSIn) is a collaborative academic network created in partnership with the MTCI Americas network, which has been organizing the field of integrative oncology in the country through the Integrative Oncology Committee in collaboration with the NCI of the Brazilian Ministry of Health and with the mission of participating in the international network of integrative oncologists through partnerships with the NCI NIH and the Society of Integrative Oncology - SIO.

Method: CABSIn has promoted the enhancement of integrative oncology throughout the country.

Results: In collaboration with OCCAM, NCI/NIH we identified leading integrative oncology programs in Brazilian hospitals of excellence such as Albert Einstein Hospital, Oswaldo Cruz Hospital, NCI Hospital of the Ministry of Health and other university hospitals of the University of São Paulo and Federal University of Ceará that have been implementing several of these complementary practices that will be presented in our panel with swept levels of integration. A major goal for CABSIn for the next two years is to enhance integrative oncology research capacity in potential partnerships with SIO, OCCAM/NCI, and NCCIH, both at NIH.

Libin Jia, M.D.

NCI and China Collaborative Studies on Traditional Chinese Medicine and Cancer

Abstract: Since 2007, the US National Cancer Institute (NCI) Office of Cancer Complementary and Alternative Medicine (OCCAM), together with the Cancer Institute of the China Academy of Chinese Medical Sciences (CICACMS), institutes at China Academy of Sciences, Chinese Academy of Medical Sciences and other Chinese universities, have engaged in collaborations on Chinese medicine (CM) and cancer research. Through these collaborations, CM drugs and compounds have been studied at NCI labs. The presentation summarizes the discoveries and progress on these collaborative research projects, exploring the aspects of cancer prevention, botanical drug mechanisms of action and component analysis/quality control (QC), anticancer activity screening and some new initiatives. These and other related projects have provided the backdrop for establishing a new organization, the International Consortium for Chinese Medicine and Cancer (ICCMC), to promote international collaborations in this field.

Jeff Buchsbaum, M.D., Ph.D., A.M.

Colossus Team Hub and Related Work

Abstract: In the context of a long-term relationship with the radiation oncology groups in India at TMC and AIIMS along with other aspects of the GOI, RRP has initiated a project to port Geant4

and its wrapper, TOPAS, to FPGA. In the talk the history of Geant4 in terms of TOPAS will be reviewed. The idea of biological dose will be reviewed. And the history and process of developing the team to work on this project will be presented. As it is an ongoing project, the status of the project will be reviewed at the meeting as possible. Related areas of research collaboration will be discussed as time allows.

Gabriel Lopez, M.D.

Partnerships on Integrative Oncology MD Anderson Cancer Center (MDACC) with Chile and Brazil

Abstract: The evidence informed clinical model for the delivery of integrative oncology at MD Anderson includes a physician led, coordinated approach among interdisciplinary, complementary health professionals. Collaborative research partnerships were formed with oncology programs in Chile (Clinica Alemana, Santiago) and Brazil (Albert Einstein Cancer Hospital, Sao Paulo) to learn more about the beliefs and needs of those affected by cancer as related to integrative oncology. Results from survey-based research are meant to help inform decisions regarding integrative oncology program development in these oncology care centers. Future directions include the development of clinical research collaborations through shared platforms for collection of patient reported outcomes assessments.

William R. Folk, Ph.D.

International Center for Indigenous Phytotherapy Studies (TICIPS)-Research Collaborations with Africa on medicinal plants

Abstract: I will comment on some of the lessons learned from TICIPS that apply to Integrative Cancer Care and Research in Africa.

TICIPS was funded by NIH/NCCAM/FIC (U19 AT003264) with these aims:

- to create a collaborative environment for research between U.S. and African scientists and healthcare providers, and to communicate evidence for the safety and efficacy of CAM;
- to train young scientists, and to promote conservation of plant biodiversity and protection of indigenous knowledge;

Our efforts were highlighted by two randomized, placebo-controlled safety trials (RCTs) (1,2) of phytotherapies utilizing *Sutherlandia frutescens*, a native legume used widely for multiple health conditions, including cancers, infections and diabetes. (Details of the trials will be presented in a poster.) These are the first RCTs of African phytotherapies to be conducted under rigorous scientific, regulatory and ethical norms. These studies have led to continuing research and training supported by the RSA-MRC and NIH/NIAID. Implementation of these trials also helped strengthen guidelines for CAM/botanical research in South Africa; strengthened research and training capacity of multiple educational institutions and promoted partnerships with traditional medical practitioners.

- 1) Johnson et al (2007) A randomised, double-blind, placebo-controlled Phase 1 Trial of *Lessertia frutescens* in healthy adults. *PLoS Clinical Trials* 2 : e16.
- 2) Wilson et al (2015) Consumption of *Sutherlandia frutescens* by

HIV-seropositive South African adults: an adaptive double-blind randomized placebo-controlled trial. *PloS One* 10(7):e0128522.

Avraham Rasoly, Ph.D. OCCAM-DCTD, NCI/NIH

Potential mechanisms for strengthening natural products research collaborations in LMICs

Abstract: Therapeutic natural products are an important element of traditional medicine and integrative oncology. While much of the traditional medicine and natural product resources are in LMICs, the technologies, clinical expertise and the funding to explore these resources are mainly in Western countries. Collaborative research between U.S. institution and LMICs institutions on cancer therapeutics and preventive natural products can lead to increase exploration of natural products for cancer prevention and therapy.

Collaborative research is built on sharing research approaches, expertise, biological material, resources and training opportunities. These collaborative efforts have the potential to broaden natural products integrative oncology and provide more cancer therapy options in LMICs and the U.S. while protecting LMICs from inappropriate exploitation of their resources.

This presentation will discuss the potential challenges for collaborations between U.S. institutions and LMICs, including protecting the rights of LMICs, and strategies for overcoming these challenges. In addition, it will present potential approaches for building and developing collaborative research capacity suitable for exploring natural products in LMIC settings in collaboration with U.S. institutions.

Sudha Sivaram, Ph.D. CGH, NCI/NIH

Global Cancer Research Training: Opportunities at NCI/NIH and Considerations in Integrative Oncology Research

Abstract: It is estimated that low- and middle-income countries (LMICs) will bear a disproportionate burden of cancer incidence and mortality in the coming decades. Collaborative research between US and LMIC institutions can explore ways to understand and address cancer control in LMICs. Such research to advance cancer knowledge relies on a well-trained work force. This presentation will outline some of the opportunities for cancer research training in global settings at the NIH and NCI. We will also discuss specific considerations in research capacity building and workforce development that are particularly relevant to collaborative research in low-and middle-income country settings.

Paige Green, Ph.D. DCCPS, NCI/NIH

Integrative Oncology Research: Perspectives from the National Cancer Institute Division of Cancer Control and Population Sciences

Abstract: The Division of Cancer Control and Population Sciences (DCCPS) aims to reduce risk, incidence, and deaths from cancer as well as enhance the quality of life for cancer survivors. The division conducts and supports an integrated program of the highest quality genetic, epidemiological, behavioral, social, applied, and surveillance cancer research. DCCPS-funded research aims to understand the causes and distribution of cancer in populations, support the development and delivery of effective interventions, and monitor and explain cancer trends in all segments of the population. Central to these activities is the process of synthesis and decision making that aids in evaluating what has been learned, identifying new priorities and strategies, and

effectively applying research discoveries to reduce the cancer burden. The presenter will give a brief overview of the division's integrative oncology portfolio, highlight collaborative models, and outline opportunities for strengthening integrative oncology programs in low and middle-income countries.

Della White, Ph.D., NCCIH/NIH

Role of the National Center for Complementary Medicine & Integrative Health (NCCIH/NIH) advancing Research

Abstract: The mission of NCCIH is to determine, through rigorous scientific investigation, the fundamental mechanisms, usefulness and safety of complementary and integrative health interventions and their role in improving health and health care. NCCIH is interested in research to advance our understanding of mechanisms of action through which natural products and mind and body approaches affect pain and stress. Natural products include botanicals, pre/probiotics, and products marketed as dietary supplements. Mind and body approaches include various meditation approaches (e.g., mindfulness), hypnosis or guided imagery, meditative movement approaches (e.g., yoga, tai chi, qi-gong), body-based approaches (e.g., spinal manipulation, massage, mobilization, acupuncture), a combination of these approaches (e.g., meditation and yoga, such as in mindfulness-based stress reduction MBSR), or complex interventions including music and art therapy. In this presentation I will highlight funding opportunities for basic and mechanistic research.

Marya Levintova, Ph.D. FIC/NIH

Fogarty International Center (FIC/NIH) role advancing research and training in LMICs

Abstract: The Fogarty International Center (FIC) is one of the NIH Institutes/Centers that specifically focuses on supporting research and research training for researchers and institutions in the low and middle-income countries. This presentation will discuss the programs relevant to supporting research and research training in integrative oncology for LMICs.

Partha Basu, M.D., Ph.D. IARC

Research and Training Opportunities at the International Agency for Research on Cancer (IARC)

Abstract: The presentation will focus on those programs and opportunities available at the International Agency for Research on Cancer to support research and training opportunities related to integrative oncology with emphasis on LMICs.

Geetha Gopalakrishna Pillai, M.D. WHO

Training and Research Opportunities on Integrative Oncology at the World Health Organization (WHO)

Abstract: The presentation will highlight training and research opportunities available at the World Health Organization (WHO) including some of its Regional Offices and their partners in areas pertinent to integrative oncology.

Roger Chammas, M.D., Ph.D. FAPESP

Research opportunities and funding in the São Paulo Research Foundation (FAPESP), Brazil.

Abstract: In this presentation, I will highlight the current funding mechanisms that can be used for cancer research in São Paulo, Brazil, emphasizing the programs of Fundação de Amparo à Pesquisa de São Paulo (FAPESP, www.fapesp.br). FAPESP essentially funds activities of researchers based in the State of São Paulo, including research grants and stipends for undergraduate and graduate students and postdoctoral fellows. Attention is also given to research activities that either subsidize innovative public policies or that create value for companies from either the public or private sectors. A variety of programs exists to promote interactions of researchers with national and international partners in leading scientific and technological research institutions including some aspects of integrative oncology. FAPESP liaised with a number of funding agencies, such as NIH, MRC-UK, Wellcome Trust and NWO, in specific programs or calls to foster bilateral collaboration. International collaboration agreements have proven as a useful strategy to shape the scientific ecosystem in the São Paulo, increasing the impact of São Paulo-based Brazilian research for the last ten years.

Vaidya Kartar Singh Dhiman, Ph.D. CCRAS

Integration of Ayurveda for Cancer Care: Research Experiences and Opportunities in CCRAS-India and way forward

Abstract: Cancer is one of the most common causes for morbidity and mortality globally, estimated to have risen to 18.1 million new cases and 9.6 million deaths in 2018. Medical advances in the diagnosis and management of cancer have markedly increased survival rates however the cancer survivors are almost three times more likely to report fair or poor health after treatment and twice as likely to have psychosocial disabilities and physical and functional limitations as persons without cancer or chronic illness. Thus, Cancer rehabilitation is utmost importance to cater the physical and individual needs of Cancer patients and Ayurveda can play a vital role in cancer rehabilitation to address the disabilities and to help cancer survivors to reduce morbidity and to improve quality of life through Comprehensive Ayurveda treatment with individualized (personalized) approach i.e. Whole System Ayurveda Approach.

Considering the strength of Ayurveda in preventive, restorative, supportive and palliative cancer rehabilitation, the Central Council for Research in Ayurvedic Sciences (CCRAS) has undertaken Randomized Double blind Placebo controlled clinical trial to evaluate the efficacy of a polyherbal Ayurvedic formulation Ayush QOL -2 C to improve Quality of life in Cancer patients. The study revealed a trend towards better local control and survival in the Ayush QOL- 2 C group and the drug was safe and well tolerated.

In a first ever clinical study of Cannabis leaves in Cancer care conducted in India at RARP CARIC-Mumbai CCRAS, the administration of *Shodhita Bhanga* (processed *Cannabis sativa*) leaves powder in dose of 250 mg thrice a day for a period of 1 month; showed significant relief in pain anxiety and depression of cancer patients without creating any major side effects, dependency and withdrawal symptoms.

Many such researches have been reported exhibiting the potential of Ayurveda in Cancer Care and realizing its scope, the Council has also undertaken Systematic Review, Meta-analysis; and Revival, Documentation, Validation and analysis of data from practitioners, institutes. The efforts

will be useful in making more precise estimates of Ayurvedic Interventions effectiveness in the management of cancer either as stand-alone or as add-on to conventional management.

Wei Hou, M.D. CACMS

Research Funding Opportunities at the China Academy of Chinese Medical Sciences

Abstract: Current and potential future research opportunities at the China Academy of Chinese Medical Sciences (CACMS) will be discussed including preclinical studies and evaluation of various kinds of new TCM anti-cancer drugs.