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Dear Colleagues,

It is our pleasure to welcome you to the “Molecular Interception of Disease Symposium”, organized as part of the Sidra Symposia series.

Over the course of two days a panel of local and international experts will present recent advances in high resolution molecular profiling. They will more particularly discuss and illustrate the use of this technology as it is applied to monitoring of individuals over time in clinical studies.

High resolution molecular profiling consists in simultaneous measurement of analytes on very large scales - typically in the order of thousands or tens of thousands of parameters.

When applied to a clinical setting these so called “Omics” or “systems” approaches can be used to obtain highly detailed molecular phenotypes of patients. And when measurements are taken over time it can identify changes that accompany the evolution of clinical symptoms.

But when applied to samples collected at relatively high frequency in asymptomatic individuals the use of such technology may also allow the identification of molecular changes that reflect an active disease process but precede onset of clinical symptoms.

This is where the opportunity for interception of disease lies. The potential health benefits are far reaching. Indeed, the early detection of “molecular symptoms” could potentially enable early therapeutic intervention and interruption of disease processes, thus preventing people from ever experiencing clinical symptoms.

Similar principles may be applied to the monitoring of responses to treatment, for instance in cancer patients, where molecular “shifts” may be identified that precede observable clinical response, or adverse events.

Groundbreaking technological developments will pave the way towards a bright future in medicine. Much remains to be done and the Sidra medical and research center is committed to play a leading role in this endeavor.

The organization of this symposium is an important step in that direction and we hope that these two days of exchanges and discussions will prove particularly fruitful to you.

Damien Chaussabel     Davide Bedognetti
Program Schedule

Day 1 Sunday November 6th, 2016 QNCC- Auditorium 2

07:00 – 08:00 Registration and refreshments
08:00 – 08:05 Welcome notes & Introduction of Day 1
08:00 – 08:20 Session 1 Molecular interception and women’s health
Moderators
Rusung Tan, MD, PhD Sidra Medical and Research Center, Doha, Qatar
Dr. Omar El-Agnaf, PhD Qatar Biomedical Research Center Institute (QBRI), HBKU, Qatar Foundation, Doha, Qatar

08:10 – 08:40 Virginia Pascual, MD, PhD
Baylor Institute for Immunology Research, Dallas, TX, USA
Personalized approaches to understand the molecular complexity of human Lupus

08:50 – 09.25 Dana Orange, MD, PhD
Rockefeller University, New York, NY, USA
Molecular Phenotyping the Evolution of Rheumatoid Arthritis Flares.

09.25 – 10.00 Bob Terbrueggen, PhD
Dr. Tarry, Los Angeles, CA, USA
High frequency transcriptomics: direct-to-patient clinical studies power advances in monitoring disease activity & therapy response transcriptomics

10.00 – 10.20 Comfort Break (20 min.)
10.20 – 10.55 David Klatzmann, MD, PhD
Pierre & Marie Curie University and Medical School, Paris, France
Deep phenotyping for management of autoimmune diseases: from understanding pathophysiology to treatment follow-up

10.55 – 11.30 Karsten Suhre, PhD
Weill Cornell Medical College, Doha, Qatar
Deep molecular phenotyping of the Qatar Metabolomics Study on Diabetes (QMDiab)
11.30 – 12.05 Gabriele Ronnett, MD, PhD Janssen Research & Development Johnson & Johnson, Titusville, NJ, USA Disease Interception Accelerator: Thinking about health differently  

12.05– 13.00 Lunch (55 minutes)

Short talks, selected from abstracts:

13.00 –13.15 Shaza B. Zaghlool Weill Cornell Medical College, Doha, Qatar, A systems biology approach to deep phenotyping of epigenetic response

13.15 –13.30 Jaroslav Filip Qatar University, Doha, Qatar Lectin-based impedance biosensors on modified graphene oxide platform

Session 2  Deep Phenotyping Data: Mining and Applications
Moderators: Michele Ceccarelli, PhD Qatar Computational Research Institute, HBKU, Doha, Qatar Wouter Hendrickx, PhD Immunology and Therapy Section, Division of Translational Medicine, Sidra Medical and Research Center, Doha, Qatar

13.30 – 14.05 John Tsang, PhD National Institutes of Health (NIH), Bethesda, MD, USA From humans to single cells: towards an integrative and predictive understanding of the immune system

14.05 – 14.40 Vladimir Jojic, PhD University of North Carolina, Chapel Hill, NC, USA Machine learning and molecular and cellular monitoring data mining

14.40 – 15.00 Comfort Break (20 min.)

15.00 – 15.35 Damien Chausabel, PhD Sidra Medical and Research Center, Doha, Qatar Monitoring blood transcriptome fingerprints in health and disease

15.35 – 16.10 Laurent Chiche, MD, PhD Hopital Européen, Marseille, France High resolution molecular monitoring of inflammatory and autoimmune diseases

16.10 – 16.35 Panel Discussion (Moderator: Laurent Chiche – Perspectives on Data Science in Medical practice and Medical education)

16.35 – 16.40 Closing Remarks

Day 2  Monday November 7th, 2016

Topics/Speakers:

07.30 – 08.00 Registration and refreshments

08.00 – 08.15 Welcome notes & Introduction of Day 2

08.15– 08.50 Hadi Abderrahim, MD, PhD, MBA Qatar Foundation, Doha, Qatar Achieving personalized healthcare through (very) early screening, monitoring and stratified treatments

Session 3  Molecular interception in medical oncology
Moderators: Ramzi Mohammad, PhD Translational Research Institute (TRI) Hamad Medical Corporation, Doha, Qatar Salha Bujassoum, MD National Centre for Cancer Care and Research Hamad Medical Corporation, Doha, Qatar

08.50– 09.25 Amir Jazaeri, MD The University of Texas MD Anderson Cancer Center, Houston, TX, USA Immunotherapy beyond Melanoma: The case for Gynecologic Cancers

09.25 – 10.00 Davide Bedognetti, MD, PhD Sidra Medical and Research Center, Doha, Qatar Molecular profiling for the identification of biomarkers of immune responsiveness in cancer patients

10.00 – 10.20 Comfort Break

10.20 – 10.55 Gabriele Zoppoli, MD, PhD University of Genova, Genova, Italy Noninvasive tracking of tumor relapse, resistance, and response to treatment: what have we learnt from the past? What can we expect in the future?
10.55 – 11.30  
Vanessa Dumeaux, PhD  
McGill University, Montreal, Canada  
Interactions between the tumor and the blood systemic response of breast cancer patients

11.30 – 12.05  
Cristina Maccalli, PhD  
Sidra Medical and Research Center, Doha, Qatar  
Multifaceted immunomonitoring to identify biomarkers for the clinical outcome of cancer patients: lessons learned

12.05 – 12.40  
Mohammed Harris, PhD  
Sidra Medical and Research Center, Doha, Qatar  
Non-caloric sweetener as an MRI contrast agent for cancer detection

12.40 – 13.35  
Lunch  

Session 4  
Deep phenotyping technologies

Moderators:  
Julie Decock, PhD  
Qatar Biomedical Research Center, HBKU, Doha, Qatar

14.55 – 15.30  
Souhaila Al Khodor, PhD  
Sidra Medical and Research Center, Doha, Qatar  
The human Microbiota at the Interface of health and disease

15.30 – 16.05  
Annalisa Terranegra, PhD  
Sidra Medical and Research Center, Doha, Qatar  
Microbiome modulation by diet and lifestyle

16.05 – 16.40  
Brice Gaudillere, MD, PhD  
Stanford University, Stanford, CA, USA  
Tracking the immune clock of pregnancy: A window into mechanisms of preterm birth

16.40 – 16.45  
Closing Remarks & Adjourn

Short talks, selected from abstracts:

13.35 – 13.50  
Adaikalavan Ramasamy  
The Jenner Institute, University of Oxford, UK  
Functional PCA of time course transcriptomics data after malaria challenge

13.50 – 14.05  
Mathieu Garand  
Medical Research Council Unit The Gambia, Fajara, The Gambia  
Increased STING-mediated interferon α production in human neonates is driven by host antiviral responses and upregulation of IFIT complex genes.

14.05 – 14.20  
Noha A. Yousri  
Weill Cornell Medical College, Doha, Qatar  
Metabolic Quantitative Trait Loci in the Qatari Population

14.20 – 14.35  
Anna Halama  
The metaQ – a platform for targeted metabolomics studies in Qatar

14.35 – 14.40  
The break after the short talk
Speaker’s biographies

Souhaila Al Khodor, PhD

Dr. Al Khodor is an Investigator in the Division of Translational Medicine at SIDRA Medical and Research center, Qatar, since January 2015. Dr. Al Khodor received her Bachelor’s degree in Medical Lab. technology from the Faculty of Public Health at the Lebanese University in 2001. Soon after, she started her Masters degree in Microbiology and Immunology at the American University of Beirut while working as a Senior Microbiologist in charge at Hammoud University Medical Center in Lebanon (2002-2005). Dr. Al Khodor received her second Masters degree and her PhD in Microbiology and Immunology from the University of Louisville, Louisville, KY, USA (2005-2008). Her work focused on studying how Legionella pneumophila an intracellular pathogen, hijacks the host ubiquitination machinery. Before joining SIDRA, Dr. Al Khodor worked as a postdoctoral fellow in the Signaling Systems Unit, laboratory of Systems Biology, at NAID NIH, USA. She used systems biology based approaches to study Burkholderia cenocepacia, a multidrug resistant intracellular pathogen that causes devastating infections in patients suffering from cystic fibrosis.

At SIDRA, Dr. Al Khodor will pursue her interest in understanding the molecular mechanisms by which microbes signal through the cell, colonize the host, evade the immune response and cause infection. Moreover, using high throughput technologies she aims to study the role of the human microbiome in normal and pathological conditions and to develop models to study the host-microbiome interactions. She is interested in deciphering whether changes in the vaginal microbiome can predict woman’s health and pregnancy complications and whether manipulating the gut microbiome composition can improve outcomes of Vitamin D treatment and kidney disease prognosis.

Dr. Al Khodor has over 19 peer-reviewed publications, has membership of the American Society of Microbiology (since 2005) and is a member of the editorial board of the Frontiers in Microbiology (since 2015).

Davide Bedognetti, MD, PhD

Dr. Bedognetti is the Director of the Immunology and Therapy Section at Sidra Medical and Research Center. Dr. Bedognetti received his MD and PhD in Clinical and Experimental Oncology and Hematology from the University of Genova, Italy. After completing his medical residency in Medical Oncology in 2008, he joined the Infectious Disease and Immunogenetics Section (IDIS) of the US National Institutes of Health (NIH) where he completed his post-doctoral fellowship. Since 2013, he served also the Director of the Federation of Clinical Immunology Societies (FOCIS) Center of Excellence at NIH Clinical Center. He joined Sidra Medical and Research Center in 2014 as Director of the Tumor Biology, Immunology, and Therapy Section. Dr. Bedognetti is also Adjunct Associate Professor at the Hamad Bin Khalifa University in Doha. He received several awards including the STITC Travel Award, the Merit and Young Investigator Awards of the Conquer Cancer Foundation of ASCO, and the ASH Travel Award. Dr. Bedognetti is an active member of the Society for Immunotherapy of Cancer (SITC), American Society of Clinical Oncology (ASCO), Federation of Clinical Immunology Societies (FOCIS) and TCGA Pan-Immune working group. He currently serves as Editor of the Tumor Microenvironment Section for the Journal of Translational Medicine and as Editorial Board Member of Biomarkers Research. He has published 45 peer-reviewed scientific articles.

Dr. Bedognetti and his team emphasize on identifying molecular mechanisms of immune-resistance and immune-sensitivity in breast cancer, the most prevalent cancer in women of the MENA region. The ultimate goal is to develop novel immunotherapeutic approaches that can improve the prognosis of women affected by this condition. The team employs high-throughput approaches to de-convolute the molecular network of host-tumor interactions, and to understand its relationship with treatment effectiveness. They use samples from clinical studies as starting point of their analyses. Investigations are performed according to a “Bedside to Bench and Back” (BB&B) approach, defined as follows: i) hypothesis generation through analysis of samples collected in clinical studies (ex vivo), ii) explanation of the findings through mechanistic investigations (in vitro or in vivo), iii) development of therapeutic strategies acted at interferring/or enhancing the mechanism responsible for immune-resistance/or immune-sensitivity, iv) validation of the hypothesis through clinical/translational trials.
Damien Chaussabel, PhD

Dr. Damien Chaussabel leads the Systems Biology Program at Sidra. It will leverage cutting-edge systems profiling technology to forge a path towards data-enabled medicine. Dr. Chaussabel obtained his PhD from the University of Brussels in 1999. As a trained immunologist, he acquired unique expertise in the genomics and bioinformatics fields, pioneering the use of whole genome transcriptional profiling tools as a postdoctoral fellow at the NIAID/NIH for the study of host-pathogen interactions. Prior to joining Sidra, Dr. Chaussabel developed a thriving genomics and bioinformatics program at the Baylor Institute for Immunology Research in Dallas TX, where he built a team comprising over 20 members, including immunologists, molecular biologists, bioinformaticians, software engineers, and biostatisticians. He served as head of the Systems Immunology Division at the Benaroya research institute in Seattle WA (2010-2014) where he led studies investigating “genomic reprogramming” that occurs in the blood of patients with infectious and autoimmune diseases as well as in response to vaccination.

Laurent Chiche, MD, PhD

Physician (internal medicine, intensive care) and researcher in immunology, he is the author or coauthor of nearly 100 indexed scientific articles, and the investigator of several translational and industrial research in the context of autoimmune diseases, mainly systemic lupus. He completed his training at the University Hospital of Marseille, France.

Vanessa Dumeaux, PhD

Dr. Vanessa Dumeaux is a senior researcher at the McGill Breast Cancer Informatics laboratory in Montreal, Canada. She received her doctorate in Pharmacy in France in 2002. She then obtained her PhD in molecular epidemiology, a joint degree from the University of Tromso (Norway) and the University of Paris-South XI (France). During her postdoctoral studies, she visited the Department of Genetics at the Norwegian Radium Hospital, the Laboratory of Bioinformatics and Functional Genomics at Princeton University, and the Department of Mathematics at the University of Paris IV.

Her research interests lie in the construction of patient cohorts that are representative of the disease in the population, and the subsequent profiling and analysis of these cohorts using modern genomic techniques. During the past 14 years, she has been working with the Norwegian Women and Cancer study (NOWAC) to investigate hormonal carcinogenesis, and gene expression profiles in response to diverse exposures and health status including breast cancer. More specifically, she is interested in characterizing the patient systemic response to the presence of cancer and in investigating how this affects breast cancer progression. Details on current projects can be found at http://www.bci.mcgill.ca/home/members/dumeaux/

Brice Gaudillere, MD, PhD

Born in France, Dr. Gaudillere studied Engineering at Ecole Polytechnique before completing an MD-PhD degree from the Harvard-MIT Health Sciences and Technology program. During his postdoctoral fellowship in Dr. Garry Nolan’s laboratory (Stanford University), Dr. Gaudillere developed and standardized a pipeline to implement high dimensional mass cytometry (a.k.a flow cytometry by time of flight mass spectrometry, or CyTOF) in clinical studies.

Dr. Gaudillere is now an Assistant Professor at Stanford University. His research group combines high parameter mass cytometry with other proteomics approaches and advanced bio-computational methods to study how the human immune system responds and adapts to acute physiological perturbations. Ongoing studies in the Gaudillere lab focus on several clinical scenarios including 1) pregnancy and preterm birth (in collaboration with the Bill and Melinda Gates and the March of Dimes foundation), 2) surgical recovery and traumatic injury, 3) neurocognitive recovery after stroke.

Dr. Gaudillere is also a Board Certified Anesthesiologist and works clinically in the operating room 25% of his time.
Mohammed Harris, PhD

Mohammad Haris, PhD, is a Principal Investigator within the division of Translational Medicine at Sidra Medical and Research Center. Originally, a biochemist, he obtained his PhD in Biomedical Imaging. In 2007, Dr. Haris joined “Center for Magnetic Resonance and Optical Imaging” in the Perelman School of Medicine at the University of Pennsylvania (UPENN), where he focused on developing non-invasive metabolic MRI imaging techniques. During his tenure at UPENN, he developed various novel MR imaging methods to image metabolites in vivo with potential application to study cancer, neurodegenerative diseases, bioenergetics of the myocardium and skeletal muscles. His works resulted in several patents and publications in high profile journals. Dr. Haris serves as a reviewer for a number of peer-reviewed Imaging, and Neuroimaging journals.

Dr. Haris research focuses on developing novel MR imaging techniques with an emphasis to diagnose various human diseases at the incipient stage and to accurately monitor therapeutic responses. Dr. Haris research is inspired by the increasing needs in clinical medicine for innovative, noninvasive imaging technologies capable of providing precise anatomical, functional and molecular information of various human diseases.

Amir Jazaeri, MD

Dr. Jazaeri is an Associate Professor and the Director of the Gynecologic Cancer Immunotherapy Program in the Department of Gynecologic Oncology and Reproductive Medicine at the University of Texas, MD Anderson Cancer Center. He obtained his Bachelor’s and Medical degrees from the University of Virginia and completed his residency in Obstetrics & Gynecology at the same institution. He completed his fellowship in Gynecologic Oncology at the National Cancer Institute and MD Anderson Cancer Center.

Since his recruitment in 2014, he has established a broad base immunotherapy program for gynecologic cancers that include adoptive cell therapies, autologous vaccines, and immune checkpoint inhibitor investigations. His other areas of research interest include innovative clinical trial designs and translational research for identification of novel immunotherapy targets for gynecologic cancers.

Vladimir Jojic, PhD

Vladimir Jojic joined the department of Computer Science at the University of North Carolina at Chapel Hill in 2011. He completed his Computer Science postdoc in Daphne Koller’s lab at Stanford University where he worked on problems of regulatory network reconstruction, metagenomics, and large scale convex optimization. He earned his PhD in computer science from the University of Toronto with Brendan Frey. Vladimir was awarded a Microsoft Research Fellowship supporting his PhD research into graphical model applications in computational biology. Prior to enrolling in the graduate program, Vladimir worked at Microsoft Corporation as a software developer. He earned his BS in mathematics and computer science from the University of Illinois at Urbana-Champaign.

Vladimir’s main areas of interest lie at the intersection of machine learning and immunology, with applications in understanding immune system development and disease progression.

David Klatzmann, MD, PhD

Dr. Klatzmann is the Director of Immunology-Immunopathology-Immunotherapy Research Unit at UPMC, INSERM and the Director of Clinical Investigation Center in Biotherapy at Pitie-Salpêtrière Hospital and the Chair of Inflammation-Immunopathology at the Immunotherapy hospital/university department. His specific interests and research activities are in Fundamental Immunology as he studied the development, homeostasis and function of T cells, with a special focus on regulatory T cells (Tregs), Pathophysiology as he studied the role of Tregs in inflammation, autoimmunity and cancer and also the Therapy as he developed various T cell and Treg-based biotherapies. He was among the first doctors and scientists involved in AIDS research. He also contributed the hypothesis that HIV would be best looked for in patients with a lymphadenopathy syndrome, and specifically in their lymph nodes (3,4). This hypothesis was key to the isolation of HIV, as outlined by the Nobel Committee in 2008. He also developed a strategy based on killing pathological cells, for which I coined the expression “suicide gene therapy.”
Cristina Maccalli, PhD

Cristina Maccalli is a Staff Scientist at the Immunology and Therapy Section, Division of Translational Medicine, Sidra Medical and Research Center, Doha, Qatar.

Cristina obtained in 1990 a Master’s Degree in Biological Sciences and then, in 1996, a Ph.D. in Applied Genetics at the University of Milan, Italy. Her research interest lies in the area of tumor immunology and immunotherapy, with main focus on the immunomonitoring and characterization of immune responses in cancer patients. She has carried out her research programs at the National Cancer Institute in Milan, Italy and, then, at the Surgery Branch, National Cancer Institute, NIH, Bethesda, MD, USA. She is also dedicated to the deep characterization of cancer patients’ immune responses and the identification of tumor antigens recognized by T cells in patients with melanoma and colorectal cancer.

In 2007 Cristina joined the Unit of Immuno-biotherapy of Melanoma and Solid Tumors at the San Raffaele Foundation Scientific Institute, Milan, Italy, and her interests were focus on the development of novel approaches in the immunological characterization of cancer stem cells from glioblastoma, and colorectal cancer patients and to perform monitoring of immune responses in cancer patients undergoing immunotherapy. She collaborated to the development of immunotherapy Phase I/II clinical studies for melanoma patients. In 2013 she contributed to set up in the context of the Italian Network for Biotherapy of Tumors (NIBIT) a novel laboratory dedicated to the identification and the design of standardized and validated immunomonitoring assays for cancer patients. Recently, Cristina joined the Translational Medicine Department at Sidra Medical and Research Center, Doha, Qatar, where she is involved in development of innovative studies in the context of biomarker discovery and immunotherapy.

Cristina is author/co-author of about 50 original peer-reviewed publications and chapter books. She is Associate Editor of The Journal of Translational Medicine and reviewer of a international scientific journals, e.g. Cancer Res., Clin. Cancer Res., J. Immuno. JTM, PlosOne. She acted as lecturer for elective courses on Melanoma at the University “Vita e Salute”, San Raffaele, Milan, Italy and for the Jornal International PhD Course Molecular Oncology, Experimental Immunology and New Drugs Development: University Magna Grecia, Karolinska Institute, University of Freiburg, University of Turin. Moreover, she was lecturer for ImmunOncology educational courses in the context of NIBIT. She is member of the Society of Immunotherapy of Cancer (SITC) and of NIBIT. In the context of SITC she has served as member of workshops and a member of the Society of Immunotherapy of Cancer (SITC) and of NIBIT. In the context of SITC she has served as member of workshops and working groups on immunotherapy biomarkers.

In 2013 she contributed to set up in the context of the Italian Network for Biotherapy of Tumors (NIBIT) a novel laboratory dedicated to the identification and the design of standardized and validated immunomonitoring assays for cancer patients. Recently, Cristina joined the Translational Medicine Department at Sidra Medical and Research Center, Doha, Qatar, where she is involved in development of innovative studies in the context of biomarker discovery and immunotherapy.

Cristina is author/co-author of about 50 original peer-reviewed publications and chapter books. She is Associate Editor of The Journal of Translational Medicine and reviewer of a international scientific journals, e.g. Cancer Res., Clin. Cancer Res., J. Immuno. JTM, PlosOne. She acted as lecturer for elective courses on Melanoma at the University “Vita e Salute”, San Raffaele, Milan, Italy and for the Jornal International PhD Course Molecular Oncology, Experimental Immunology and New Drugs Development: University Magna Grecia, Karolinska Institute, University of Freiburg, University of Turin. Moreover, she was lecturer for ImmunOncology educational courses in the context of NIBIT. She is member of the Society of Immunotherapy of Cancer (SITC) and of NIBIT. In the context of SITC she has served as member of workshops and working groups on immunotherapy biomarkers.

Dana Orange, MD, PhD

Dr. Dana Orange is an Instructor of Clinical Investigation and an Attending Physician at The Rockefeller University Hospital as well as an Assistant Attending Physician and Consultant to the Inflammatory Arthritis Center at Hospital for Special Surgery. Dana received her MD from Weill Cornell Medical College and then trained in Internal Medicine at New York Presbyterian Hospital and completed her Rheumatology fellowship at Hospital for Special Surgery. She then joined The Rockefeller University where she earned her Masters in Translational Research.

She is currently working to develop models to predict fluctuations in rheumatoid arthritis disease activity. Rheumatoid arthritis is a chronic disease characterized by periods of relative quiescence and unpredictable periods of flare. Considering the dynamic nature of the disease and the considerable heterogeneity between patients, a potentially powerful approach to gain insight into and to model the disease is with time series data from within individual patients. RNA sequencing of weekly blood samples prior to and during the evolution of RA flares is used to model the molecular events that correlate with flares. Acquiring frequent time-points in a handful of subjects provides the unique opportunity to leverage timing order to infer causal links between the sequence of events taking place in the course of an arthritis flare. By capturing data and samples just prior to clinical worsening we will identify biomarkers that predict future disease activity and potential new treatment targets.

Virginia Pascual, MD, PhD

Dr. Virginia Pascual is an Investigator and Director of the Centers for Inflammation and Genomics at the Baylor Institute for Immunology Research (BIRR) in Dallas, TX. She is also the Program Director for BIRR’s NIAID-funded Autoimmunity Center of Excellence and NIAMS-funded Center of Research Translation focused on Pediatric Lupus. Dr. Pascual is a practicing pediatric rheumatologist interested in basic and translational immunology. Her research focuses on pediatric Systemic Lupus Erythematosus (SLE) and Systemic-onset Juvenile Idiopathic Arthritis (sJIA) with the goals of translating laboratory findings into the identification of therapeutic targets and useful biomarkers. Her studies have led to the discovery that type I interferon (IFN) and interleukin 1 (IL-1) are important pathogenic players in SLE and sJIA, respectively. Using genomic approaches, her group is identifying novel pathways and unique signatures to follow patients in the clinic and assess responses to therapy. Dr. Pascual has been at the forefront of clinical trials using IL-1 blockers in sJIA, which have shown remarkable clinical benefits for nearly 70% of patients.
Dr. Suhre is a Professor for Bioinformatics at the Ludwig-Maximilians-University (Faculty of Biology) in association with the Institute for Bioinformatics and Systems Biology (MIPS) at Helmholtz Zentrum München, Munich, Germany (metabolomics). He was a Senior Scientist CNRS (“Directeur de Recherche”) at Information Genomique & Structurale, Marseille, France (bioinformatics and structural biology). He received his doctorate Thesis (Atmospheric chemistry and meteorology modelling) at University of Toulouse, France.

Bob Terbrueggen, PhD

Bob Terbrueggen, PhD, has over 15 years of experience in the development of revolutionary genomic technologies and products. Bob started out his career at Clinical Micro Sensors (CMS) in Pasadena, CA. At CMS, Bob was the Director of R&D where he oversaw the development of the world’s first bio-electronic DNA detection platform, the e-Sensor. Motorola acquired CMS in 2000 for $300 million, and the e-Sensor is currently being used to deliver several FDA approved diagnostic tests. Following the acquisition by Motorola, Bob became Director of Research for Motorola Life Sciences and he spent the next couple of years overseeing the development of next generation genomic platforms until leaving to rejoin the entrepreneurial world of start-ups. In 2005, Bob helped start NanoBioscans. NanoBioscans was developing genomic tests for the diagnosis and Prognosis of cancer, and it was named the 2005 best start-up of the year by the Arizona Biotech Association. In late 2005, less than 9 months after its founding, NanoBioscans was acquired by the Molecular Profiling Institute. Bob then went on to start DiTerinity Diagnostics in early 2006. Bob is an inventor on 19 approved U.S. patents and more than 20 pending applications.

Annalisa Terranegra, PhD

Dr. Annalisa Terranegra is an Investigator in Nutrigenetics at Sidra Medical and Research Center and her main interests are in genetics and environmental determinants of nutrition-related diseases, like obesity, diabetes, cardiovascular diseases, cancers, etc.

Annalisa obtained her MSc Master Degree with honors in 2000 at the University of Siena, Italy, PhD in Molecular Medicine in 2007 at the University of Milan, Italy and a PhD in Nutritional Sciences at the University of Milan, Italy in 2015.

Before to join Sidra, Annalisa achieved strong experience in molecular biology and genetics during her career at the University of Milan, Italy, as a post-graduation fellow, PhD fellow and Post-Doc position (2001-2010). Annalisa covered a consultant position in genetics at San Raffaele Hospital, Milan, Italy (2010-2012) and a research fellow position in nutrition at San Paolo Hospital, Milan, Italy (2013-2014). Annalisa also has teaching experiences as Associate Professor from 2015 adjunct appointment in the College of Science and Engineering at Hamad bin Khalifa University (HBKU), Qatar; Assistant Professor in Nephrology (2007-2010) and in Dietetic Sciences and Technologies (2010-2013) at University of Milan, Italy. Lecturer in Molecular Medicine PhD course (2009-2011) at University of Milan. Annalisa also had over 30 peer-reviewed publications and is a member of the editorial board of the Journal of Translational Medicine (since 2012) and of the Journal of Pediatrics and Child Nutrition (since 2015).

John Tsang, PhD

Dr. Tsang received his PhD in biophysics from Harvard University and BASc and MMath in computer engineering and computer science, respectively, from the University of Waterloo in Canada. Dr. Tsang has been working on systems biology and genomics research in both academic and industrial settings for over a decade. After graduating from Waterloo in 2000, he helped pioneer high-throughput computational and experimental methods to annotate the then-freshly sequenced human genome using custom DNA microarrays at Rosetta Inpharmatics and then led a bioinformatics group at Caprion Proteomics. His doctoral research was conducted in Alexander van Oudenaarden’s laboratory at the Massachusetts Institute of Technology (MIT) where he led research on the systems biology of microRNA-mediated regulation and stochastic gene expression. After earning his PhD in 2008, he returned to the Rosetta Inpharmatics (then a division within Merck Research Laboratories) to work with Dr. Eric Schadt and his group on integrative genomics and genetics of gene expression in human and mouse. He currently leads a research program developing and applying a combination of computational and experimental approaches to study the immune system (aka “systems immunology”). He is also jointly appointed as the director of computational systems biology at the Trans-NIH Center for Human Immunology (CHI), where he founded and leads a group of computational biologists integrating, analyzing and modeling large-scale data sets to study the human immune system in health and disease.
Gabriele V. Ronnett, MD, PhD

Dr. Ronnett is the Gestational Diabetes (GDM) Venture Leader in the Disease Interception Accelerator (DIA) at Janssen Research & Development within Johnson & Johnson. She received her BA, MD, and PhD from The Johns Hopkins University. She was Professor of Neuroscience, Neurology, and Biological Chemistry at Johns Hopkins University School of Medicine, where she was also the Founding Director of the Center for Metabolism and Obesity Research (CMOR) and one of the Founding Directors of the Center for Integrated Resources in Biology at Johns Hopkins. Dr. Ronnett also served as the founding Director and Head of the Department of Brain Sciences, the first such department in Korea, at the Daegu Gyeongbuk Institute of Science and Technology (DGIST) in the Republic of Korea. Her research has been in diverse fields, including obesity, diabetes, cancer, autism, olfaction, and stroke.

Gabriele Zoppoli, MD, PhD

Gabriele Zoppoli, MD PhD is Assistant Professor of Internal Medicine at the University of Genoa, and his clinical activity takes place in the prestigious University Hospital San Martino - National Cancer Institute of Genoa, Italy, the second oldest comprehensive cancer center of his Country. GZ has identified a previously uncharacterized protein causally involved in cancer sensitivity to DNA damaging agents, SLFN11 (Zoppoli G et al., Proc N A US 2012), and has described the anticancer properties of inhibiting SQLE, an enzyme of the cholesterol synthesis pathway (Brown D et al., Sci Rep 2016). Together with Collaborators from Institut Jules Bordet, GZ has reported on the genomic hallmarks of invasive multifocal (Desmedt C et al., J Pathol 2015) and lobular (Desmedt C et al., J Clin Oncol 2016) breast cancers, two "special" types of breast malignancy with unique features and clinical behavior. Currently, GZ's main research interests are: - Noninvasive markers of cancer relapse and treatment resistance (detection of free circulating tumor DNA mutations); - SLFN11 characterization in breast and ovarian cancer and its interconnections with the immune system; - SQLE function and metabolic properties in cancer; - Genomics signatures of multifocal vs. univocal breast cancer; - Functional assessment of pathognomonic determinants of lobular breast cancer.

GZ is actively involved in several national and international scientific group activities and research collaborations, and serves as Member of the Board of Directors of SOIRIC, the oldest Italian clinical oncology cooperative group.

Wouter Hendrickx, PhD

Dr. Hendrickx professional career has been a mix of wet-lab and computational biology experiences. His research has mainly been focused on cancer research, with extensive work on breast cancer at the Leuven Cancer Institute (European Framework 6 Cancer degradome project) and his doctoral dissertation on prostate cancer at the University of East Anglia (UK). During his postdoctoral research in the lab of Prof. Dylan Edwards, he was involved in the study of loss of MMP-8 expression and the incidence and progression of pancreatic cancer using 2D and 3D in vitro models (European Framework 7 SaveMe project).

Since November 2014 Dr. Hendrickx is working at Sidra Research as a senior Post-doctoral fellow in the Tumor Immunology, Biogy and Therapy section led by Dr. Davide Bedognetti. He is working on several projects aimed at identifying genetic determinants of the immune phenotype in a variety of cancer settings. In January 2016 he was awarded a Qatar National Research Fund (QNRF) - Junior Scientists Research Experience Program (USREP) grant. This project is a collaboration with Leiden University Medical Center from the Netherlands and will generate a large comprehensive colon cancer dataset including gene expression profiling and exome and TCR sequencing.
Michele Ceccarelli, PhD

Michele Ceccarelli joined Qatar Computing Research Institute (HBKU) in 2014 where is servers as acting Research Director of the Computational Science and Engineering group (CSiE). Prior to joining QCRI he was Associate Professor of Computer Science at the University of Sannio (Italy), where he worked on different problems of Computational Biology and Biomedical Imaging, and Principal Investigator of the Bioinformatics and Computational Biology Laboratory at the BIOGEM Research Center in Italy. Michele has made significant contributions to the field of cancer genomics, developing novel tools and algorithms for gene expression data analysis, gene network analysis and identification of structural genomic alterations. The algorithms developed by him and his teams have been used to discover novel biomarkers in colon and breast cancer, identification of novel gene fusions in brain tumors, and detection of specific gene signatures in developmental biology. He was involved in the TCGA Pan Glioma Analysis Working Group participating to the discovery of novel biologically and clinically relevant glioma subtypes.

Rusung Tan, PhD

Prof. Rusung Tan received his medical degree from the University of British Columbia, Vancouver and a PhD from the Institute of Molecular Medicine, Oxford with Sir Andrew McMichael. He returned to Vancouver to practice pathology and pursue research in 1997 and was made Professor in 2007. Dr. Tan is the previous Head of Pathology at Children’s & Women’s Hospital and has been the Chair of Pathology at Sidra since 2014. His main research contributions have been in understanding the role cytotoxic immune cells in the pathogenesis of X-linked lymphoproliferative disease and in the genesis and regulation of type 1 diabetes.

Salha Bujassoum, MD

Dr. Salha Bujassoum has been a Senior Consultant at the National Centre for Cancer Care and Research (NCCC) since 2005. She is the Program Director of Breast Cancer Screening (Standard and High Risk), the Clinical Lead of the Breast Multi-Disciplinary Team and co-chair of the Qatar National Breast Tumor Board. She has also been the Fellowship Program Director for Hematology and Oncology since 2011.

She is obtained her Bachelor of Medicine and Bachelor of Surgery from King Saud University in Riyadh, Saudi Arabia in 1992. She received the Specialist Certificate in Internal Medicine/Hematology from the Royal College of Physicians and Surgeons Of Canada, Toronto-Canada in 2001 and was certified by the American Board of Internal Medicine/Clinical Hematology and Medical Oncology, Toronto, Canada in 2004.

Her academic appointments are as follows: In Hamad Medical Corporation, Internship from 1991-1992 then Residency in Internal Medicine from 1992-1996. In University of Toronto, Canada: Residency in Internal Medicine (PGY1- PGY3) from 1996 to 1999 Combined Fellowship in Clinical Hematology and Medical Oncology from 2000 to 2002 and Fellowship in Bone Marrow Transplant from 2002 to 2003.

She joined Hamad Medical Corporation in 2003 as consultant medical oncology and hematology. Currently her main focus is medical oncology and major interest is breast cancer.
Omar El-Agnaf, PhD

Omar El-Agnaf received his PhD degree in biochemistry from The Queen’s University of Belfast, UK, in 1997. After postdoctoral training at The Queen’s University of Belfast and St. George’s Hospital Medical School in London, Dr. El-Agnaf established his own research group at Lancaster University, in 2001. In 2004, he moved to join UAE University as Professor of Biochemistry at the College of Medicine at UAEU. In September 2014 he joined College of Science and Engineering at HBKU in Qatar Foundation, and in January 2016 he joined Qatar Biomedical Research Institute (QBRI) to lead the Neurological Disorders Center, and since March 2016, he is the Acting Executive Director of QBRI.

His research team pursuing three research topics related to Parkinson’s disease (PD): 1) pathogenesis; 2) biomarker discovery and validation; and 3) drug discovery. In 1998, Prof. El-Agnaf demonstrated, for the first time, that alpha-synuclein protein can aggregate and form amyloid-like fibrils similar to the Lewy bodies found in PD brain. His team also reported the unexpected discovery that neuronal cells constitutively release alpha-synuclein protein and that alpha-synuclein is normally present in cerebrospinal fluid and peripheral plasma. He pioneered the quantification of alpha-synuclein in biological fluids. Several inventions have emerged from his research, and his discoveries have greatly impacted the scientific research community, provided further insight into the molecular pathogenesis of PD, and offered new opportunities for the development of novel diagnostic tests for PD. His research has been translated into clinical studies to evaluate the potential use of α-synuclein protein in body fluids as diagnostic markers for Parkinson’s disease and related disorders.

Since Prof. El-Agnaf moved to the region, he has assembled an excellent research team and has been successful in attracting an array of competitive scientific funding from prestigious international funding agencies. He is frequently invited as a speaker at international scientific and clinical meetings and is currently a member of the editorial board of several international journals. Prof. El-Agnaf is considered a pioneer in the field of Parkinson’s disease. He has been granted 8 patents and 4 under consideration, and published more than 95 refereed articles, with 48 h-index and total citations >7,000.

Julie Decock, PhD

Dr. Decock received her Ph.D. in Medical Sciences in 2008 from the Catholic University of Leuven (KULeuven), Belgium. Her Ph.D. work focused on the clinical relevance of proteases, in particular matrix metalloproteinases and cathepsins, in breast cancer. She pursued her postdoctoral research in the Cancer Research Group at the University of East Anglia, UK where she investigated the role of matrix metalloproteinases in various cancer types. She defined a role for MMP-8 in the anti-tumor immune response and angiogenic switch in a MMP8 knockout MMTV-PyMT mammary tumor mouse model. Currently, her research focuses on the molecular mechanisms underlying the aggressive behavior and poor clinical phenotype of triple negative breast cancer. In addition to basic biological research, she also conducts translational research into novel adoptive T cell therapeutic modalities for triple negative breast cancer patients.

Dr Decock is a scientist in the Cancer Research Centre at the Qatar Biomedical Research Institute (QBRI) and she holds a joint appointment as an Assistant Professor at Hamad Bin Khalifa University (HBKU) in the College of Science and Engineering, where she is involved in the teaching program of the division of Biological and Biomedical Sciences. Dr Decock’s research has been funded by several EU Framework programme projects through which she has been able to set up several successfully international collaborations. She is a member of the editorial board of Frontiers in Molecular and Cellular Oncology and is ad hoc reviewer for many peer-reviewed international journals. She has 21 peer-reviewed publications with over 600 citations and an h-index of 14.
Information about Sidra Medical and Research Center

Sidra Medical and Research Center, a member of Qatar Foundation for Education, Science and Community Development, is a new and ultramodern academic medical center in Doha, Qatar with a focus on three key areas:

- World-class healthcare for women and children
- Medical education
- Biomedical research

With the aim of becoming a center of excellence, Sidra has been designed to the highest international standards, with state-of-the-art medical equipment and sophisticated laboratories to nurture innovation and clinical advancement. Sidra will bring together the world’s most distinguished healthcare professionals to provide the highest level of medical care for patients and families.

Vision

Sidra Medical and Research Center will be a beacon of learning, discovery and exceptional care, ranked among the top academic medical centers in the world.

Mission

Sidra will provide patients with world-class healthcare services in an innovative and ultramodern facility specially designed to promote healing. In particular, it will initially address the growing need for more comprehensive patient-focused medical services for women and children in Qatar and throughout the region.

In collaboration with the premier medical school in Education City – Weill Cornell Medicine-Qatar, leading research institutions worldwide, and Qatar’s health sector, Sidra will provide a diversity and quality of care conducive to training medical students and highly skilled clinicians and will be a pioneer in clinical and translational biomedical research of value to the population of Qatar and the world.

Construction and Design

Designed by renowned architect César Pelli, Sidra features a main hospital building and a separate outpatient clinic. The main hospital will initially have 400 beds with infrastructure to enable expansion to 550 beds in a subsequent phase. The cutting-edge structure of steel, glass and white ceramic tiles was chosen to provide the ideal environment for tranquility, privacy and healing. The main hospital building incorporates three towering atriums that serve as indoor healing gardens - a unique feature that every patient will be able to view from his or her luxurious private room - and soothing water features, as well as an impressive art collection.

Patient Care

Sidra opened its outpatient clinic in May 2016 and offers outpatient services for children and obstetrics care for women through a referral based system in partnership with primary and secondary healthcare providers in Qatar. With a strong patient and family centered focus, the Sidra Outpatient Clinic is a high-tech facility that aims to deliver outstanding treatment and care, safety and efficiency. It is expected to be fully operational by 2017 with over 40 clinics and services. Once the main hospital opens, it is anticipated that more than 10,000 pregnant women will be cared for at the center, including 2,000 high-risk deliveries. Sidra will also offer services in benign gynecology and reproductive medicine. As the specialty pediatric hospital for Qatar, it will offer neonatal, general medicine, genetics, hematology/oncology, transplantation, interventional cardiology, oncology, trauma and surgical care inclusive of orthopedics, urology, plastics, ophthalmology and Ear, Nose and Throat (ENT) services.

Medical Education

Sidra’s academic partner is Weill Cornell Medicine in Qatar (WCM-Q), a branch of Weill Cornell Medical College in New York. Sidra will be a primary teaching facility for WCM-Q, providing students with the opportunity to develop their clinical skills and participate in biomedical research. Through strong partnerships with WCM-Q and other leading institutions locally and around the world, Sidra is creating an intellectual ecosystem that will support the advancement of medical knowledge and contribute to a standard of excellence in health service delivery.

Biomedical Research

Sidra’s research branch will emphasize investigations relevant to women and children’s health, in line with the Qatar National Research Strategy. Sidra will facilitate the prevention of, and early intervention for, conditions affecting the local population – in particular, women and children – including cancer, obesity, preterm birth and genetic disorders. Sidra’s research branch includes three key divisions – experimental genetics, translational medicine and biomedical informatics. Sidra’s diverse team of researchers, scientists and principal investigators lead a series of biomedical and clinical research programs designed to advance the understanding of the mechanisms of diseases; develop early prevention and therapeutics; as well as identify accurate diagnostics. The core focus of Sidra’s Research branch is to support the organization and its staff to practice personalized healthcare in all facets of healthcare delivery through the concept of personalized medicine.
Sidra will be a ‘paper-lite’ medical center, incorporating the most advanced digital applications in clinical, research and business functions. All systems will be focused on integrative data flows, eliminating redundant processes and enhancing patient care and safety. Sidra will be equipped with state-of-the-art robotics, computer-aided surgery and diagnostics, and 3D+ digital imaging.

Sidra will offer unique and unprecedented opportunities for leading health professionals to be pioneers in the discovery of knowledge and the advancement of patient and family centered care.

Sidra expects to employ more than 5,000 employees in clinical and nonclinical roles. The center is currently seeking experienced and talented individuals.

The Research Branch at Sidra serves as a hub for biomedical investigation in Qatar to facilitate the process of clinical testing and discovery by adopting advanced technologies. Its aim is to advance the understating of mechanism of diseases; to develop preventive, diagnostic and therapeutic tools; and to improve the health outcomes of the women and children of Qatar.

The Research Branch has launched its Five-Year Strategic Plan from 1 April 2015 to 31 March 2020, which outlines high-level concepts and the scope of research by prioritizing investigation and addressing biomedical problems that are national relevance and of global impact. As part of this strategy, the research team will prioritize translational research programs that link to diseases relevant to Qatar and region.

The key areas of research include:

- Developmental and preventive medicine
- Neonatal medicine, pediatric and adolescent preventive medicine, addressing issues such as inborn errors of metabolism and postnatal conditions of the infant such as hypothermia, malnutrition and infection
- Pregnancy, health and fertility
- Women’s health
- Research programs in genomics, diabetes, cancer, cardiovascular diseases; addressing issues such as gestational diabetes, gynecological cancers and hypertensive disorders of pregnancy
- Monogenic disorders treated via gene therapy or gene replacement therapy

The main research laboratories at Sidra will cover 10,000m² with a core space of 1,558 m² that will be available for all research groups at Sidra. The cores include: next generation Sequencing (NGS) and functional genomics (Experimental); NGS and advanced molecular clinical testing (CLIA level, with Clinical Laboratory); Deep phenotyping; Experimental imagine; Good manufacturing practice cell processing lab (to support stem cell program); Metabolomics; Proteomics; Bioinformatics core.

The Research Branch aims to develop world leading science and research programs that will align with Qatar’s national research strategy and also help address other public health issues. The focus of the Research Branch is to support clinicians to practice personalized healthcare in all facets of the healthcare delivery with Sidra. Most of the research in research branch at Sidra will underpin the concept of personalized medicine.

For more details about Sidra’s research branch and its five years strategy, please visit:

www.sidra.org/biomedical-research-branch
Poster presentations

**Presentation Location**
Auditorium 2

**Poster Location**
Exhibition Hall 2

**Poster Hall Hours**
- Sunday, November 6, 07:30 – 16:40
- Monday, November 7, 07:30 – 16:45

**Poster Presentation Times/Staffing Hours**
- Sunday, November 6, 13.00 – 13.30
- Monday, November 7, 13.35 – 14.35

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