GLOBAL SUMMIT AND BRAIN TRUST ON PRECISION DIAGNOSIS AND TREATMENT OF PROSTATE CANCER:
Overview, Background and Current Plans

I. 1st, 2nd, 3rd and 4th Global Summit and Brain Trust on Precision Diagnosis and Treatment For Prostate Cancer (PC) and their Impact; and

II. . Recap and Highlights of the Summit 2019 and Planning for the 5th Global Summit in 2020 - Scheduled For October 1-3, 2020, Boston (1)

Background

AdMeTech Foundation's Annual Global Summit and Brain Trust on Precision Diagnosis for PC took place starting in September 2016 and brought together – for the first time - the key international opinion leaders of every clinical subspecialty involved in patient care to bridge the gap between in-vivo imaging, in-vitro diagnostics (liquid and tissue biomarkers) and novel therapeutics.

This program has become seminal in shaping the state of the art and future vision for precision care by:
1) Educating the key stakeholders;
2) Creating and supporting a sustained cross-disciplinary dialogue and consensus on the best emerging clinical practices and research priorities; and
3) Expediting clinical adoption of promising novel diagnostics and therapeutics.

Our Summit and related Brain Trust has been recognized as one of the most influential educational and strategic efforts in prostate cancer for stimulating development and implementation of a comprehensive, multimodality approach to diagnosis and its integration with precision treatment.

In addition to stimulating new groundbreaking ideas and collaborations, this program has had extensive participation from the members of the professional and non-profit organizations playing a central role in:
1) Developing clinical guidelines for early detection and treatment (e.g., National Comprehensive Cancer Network, AUA, American College of Radiology, ASTRO, ASCO, etc.); and
2) Creating national and global scientific strategy and related infrastructure (e.g., VP Joe Biden's 1.8 Billion Cancer Moonshot Program, National Cancer Institute, Movember Foundation, etc.).

Brain Trust on Precision Diagnostics, established following the First Summit, was convened in February and May 2017, October 2017, August 2018 and October 2019 and included the key leaders of national and international programs in precision biomarkers, imaging and therapeutics from academia, industry, government and non-profit organizations.

1) Our participants are the key pioneers and opinion leaders of multiple clinical disciplines (radiology, urology, radiation oncology, pathology and medical oncology), including, but not limited to:
    a. Dr. Gerald Andriole, University of Washington, St. Louis;
    b. Drs. Wassim Abida, Sigrid Carlsson, Amita Dave, Hedvig Hricak, Steve Larson, Michael Morris, Howard Scher, Andrew Vickers and Michael Zelefsky, Memorial Sloan Kettering Cancer Center;
    c. Drs. Jelle Barentsz and Jurgen Futterer, Nijmegen/Radboud University, The Netherlands;
    d. Drs. Matthew Cooperberg, Mack Roach, Thomas Hope, Antonio Westphalen and Susan

Noworolski, UCSF;
e. Dr. David Crawford, University of California, San Diego;
f. Drs. Angelo DeMarzo, Martin Pomper, Daniel Song and Steven Rowe of Johns Hopkins;
g. Drs. Masoom Haider, Sanjeet Ghai and Laurence Klotz, University of Toronto, Canada;
h. Drs. Ashesh Jani, Christopher Filson and Mehrdad Alemozaffar, Emory University;
i. Drs. Adam Kibel, Clare Tempany, Christopher Sweeney, Jason Efstathiou, Adam Feldman and Heather Jacene, Harvard;
j. Drs. Richard Babayan and Jennifer Rider, Boston University;
k. Dr. Eric Klein of Cleveland Clinic;
l. Drs. Neil Bander, James Hu, David Margolis, and David Nanus of Cornell Weill/Columbia;
m. Dr. Peter Nelson, Washington University;
n. Drs. Daniel Petrylak, Preston Sprenkle and Jeffrey Weinreb, Yale;
o. Drs. Alan Pollack, Sanoj Punnen and Radka Stoyanova, University of Miami;
p. Dr. Art Rastinehad, Mount Sinai School of Medicine;
q. Dr. Minhaj Siddiqui, University of Maryland;
r. Dr. Thomas Wheeler, Baylor College of Medicine.
s. Dr. Wolfgang Weber, Technical University of Munich, Germany;
t. Dr. Paul Boutros and Steven Raman, UCLA;
u. Dr. Ethan Halpern, Jefferson University;
v. Dr. Liang Wang, Huazhong University of Science & Technology, China
w. Dr. Mitchell Sokoloff, University of Massachusetts;
x. Drs. Sadhna Verma, University of Cincinnati;
y. Dr. Aytekin Oto, University of Chicago;
z. Dr. Philip Koo, Banner MD Anderson Cancer Center;
aa. Drs. Peter Choyke, Peter Pinto and Baris Turkbey, National Cancer Institute;
bb. Dr. Kelvin Moses, Vanderbilt University Medical Center;

2) Drs. Kibel, Moses, Nelson, Roach, Sprenkle, Vickers and others are members of the National Cancer Comprehensive Network's (NCCN) Panels on Prostate Cancer Detection and Treatment, developing influential, cutting-edge clinical guidelines for patient care;
3) Drs. Choyke, Pinto, Siddiqui, Turkbey, and Summit Chair Dr. Faina Shtern of the AdMeTech Foundation participate in the US VP Joseph Biden's $1.8 Billion Cancer Moonshot Program, developing national strategy for cancer research and related infrastructure; and
4) Dr. Mark Buzza, Director of Global Biomedical Research Programs for Movember Foundation (headquartered in Australia) leads international scientific strategy, with specific interest in advanced PC.

The goal of the Brain Trust is to review the current and emerging data in imaging, fluid-based molecular diagnostics, tissue-based genomics, radiogenomics and proteomics, drug development and novel approaches to treatment and observation strategies, and reach consensus on the best emerging clinical practices and priority needs in research, medical education, clinical training and public awareness[2]. Our primary goal is to outline clinical, research and educational priorities, including statistically powered pilot studies on clinical role of radiogenomics in patient selection for appropriate care (observation strategy and focal, whole gland or systemic treatment).

The 2nd, 3rd and 4th Global Summit have emerged as seminal scientific and educational events in recognizing radiogenomics as the future of PC care. The program of these events, which took place in 2017, 2018 and 2019 respectively. was structured to review recent clinical advances and related scientific data in radiomics (quantitative imaging) and molecular diagnostics (including genomics), their integration into the emerging field of radiogenomics and its impact on patient selection for, design and monitoring of clinical interventions (e.g., biopsy and management strategy).

The 4th Global Summit and Brain Trust of 2019 and Plans for Summit 2020:

Summit 2019 took place on October 3-5, 2019. Building on the success between 2016 and 2018, Summit 2019 had greater participation than past events, with almost 200 attendees (compared to 150 in 2018), representing

every key clinical expertise and expanding a cross-disciplinary dialogue. Compared to Summit 2018, the number of sponsors more than doubled (from 14 to 30) and poster presentations increased from 18 to 31.

Summit 2019 examined emerging promising innovations and the pathways for their expedited clinical adoption (2).

Summit 2019 Program included population-based approach (2):

- ”Smart” screening in asymptomatic general population, including patient selection;
- Diagnostic evaluation of men with abnormal screening or clinical suspicion of PC, to improve risk assessment in order to reduce unnecessary biopsies and improve tissue sampling/targeting;
- In men with localized, recurrent or oligometastatic PC:
    1) To improve early diagnosis, staging and biologic characterization of lethal prostate cancer, requiring immediate treatment;
    2) To increase confidence in sub-clinical (indolent) disease, requiring observation strategy (e.g., active surveillance) and related monitoring;
    3) To improve patient selection for, guidance, local outcomes and monitoring of active surveillance, image-guided, minimally-invasive treatment, whole gland and/or systemic treatment;
- In men with advanced PC, including metastatic castrate resistant disease, to improve diagnosis, biologic characterization and treatment.

Summit 2019 highlighted the following Emerging Important Trends, and the related review and discussion will be expanded in Summit 2020:

1. While standard histology has been the primary tool for patient assessment, emerging data indicate the importance of biologic information (e.g., liquid biomarkers, in vivo imaging, genetic tissue profiling) for diagnostic evaluation, prediction of clinical course and clinical outcomes, treatment planning and monitoring.
2. Radiogenomics as a specific example of the integrated, multi-modality, comprehensive approach to precision diagnosis and its impact on precision care, including patient selection for the appropriate clinical interventions for localized, recurrent and advanced PC.
3. Rapidly expanding discovery of new genetic and molecular targets for both early and advanced PC, which are critical for further development and integration of in vitro diagnostics with dedicated drugs for novel in vivo imaging and therapeutics.
4. In addition to transcriptome, proteome is emerging as the information-dense source for the development of new in vitro and in vivo imaging biomarkers (3).
5. Phenotypical cancer profiling as an emerging tool for prostate cancer characterization.
6. “Smart” Screening, including baseline PSA as a critical tool for age-appropriate, individualized risk assessment.
7. Multiple promising in vitro novel liquid and tissue biomarkers and in vivo imaging tools have emerged recently for improved prediction and early diagnosis of clinically significant PC that require further research.
8. Increased utilization of liquid biomarkers (e.g., phi, 4K Score, EPI, germline testing, etc.) based on clinical validation and/or consensus - and their integration (including the appropriate sequencing) with imaging for improved selection of patients for biopsy and improved tissue sampling for both standard histology and genetic tissue profiling.
9. Several areas of advanced imaging, including their standardization and evaluation of clinical utility of single imaging tools and multi-modality image fusion:
    a. Real-time, high resolution and contrast-enhanced Ultrasound, emerging as a promising tool for early detection of PC;
    b. Multi-parametric MRI, which is currently widely used before and after diagnosis of PC; and
    c. Molecular imaging and its role not only in advanced metastatic PC, but also in improved diagnostic assessment prior to and after diagnosis of the localized PC, in early detection of recurrence, and in the definition and treatment of the oligometastatic disease.
10. Image-Guided, Minimally-Invasive Focal Treatment, emerging as a promising patient care option for localized disease, though further consensus and research is needed to define its clinical utility compared to Active Surveillance and Whole-Gland Treatment.
11. Further discussion, expert consensus and research is needed to define clinical indications and implementation for adding:

a. Genetic cancer profiling to routine pathologic examination of biopsy tissue samples, with the goal to improve patient selection for precision care (e.g., Active Surveillance, Focal Interventions or Immediate Whole Gland Treatment); and
b. Genetic cancer profiling to routine pathologic examination of post-surgical tissue specimens, with the goal to optimize treatment planning.

12. Evaluation of ImmunoHistoChemistry (IHS)-based tests for molecular markers of other cancers as a model for PC;
13. Bioinformatics, Machine Learning and Deep Learning and related tools for multi-factorial, multi-modality, information-intense data analysis; and
14. Design and implementation of health-care economic analyses, including cost-benefits of novel diagnostics and therapeutics.

The following additional recommendations have been made for the Summit 2020:

1. To prepare and submit a Summit 2019 multi-disciplinary overview, including a Consensus Statement, to a peer-reviewed publication;
2. To publish Summit 2019 presentations online by the Grand Rounds of Urology, which has an international audience [4];
3. To invite organizations leading accreditation, regulatory and reimbursement policies and commercial product development to stimulate discussion on creating a facilitated pathway for clinical adoption of promising diagnostics and therapeutics (modeled after breast cancer and AIDS initiatives); and
4. To expand the Summit Program to 3 days in order to increase the time for discussion and the attendees' participation at the end of each Scientific Session, in Poster Presentations and Exhibit Tours.

Impact on Clinical Community, National and International Scientific Strategy (2016-2019)

The First Global Summit and related "Brain Trust" meetings were instrumental in shifting integrated, multi-modality approach to PC Diagnosis and its impact on patient care from the fringe to the center of medical education and science and related strategic planning, both nationally and internationally. As a direct result of this event, our outstanding faculty members ensured that US Vice President Joe Biden's $1.8B Cancer Moonshot Program prioritized prostate cancer in general and precision oncology specifically, including radiogenomics. This program invited AdMeTech to take part in a strategic planning for national research agenda and related infrastructure, starting in early 2017.

The Second, Third and Fourth Annual Summit exceeded everyone's expectations even further. These events brought into a sharp focus the groundbreaking potential of the emerging field of radiogenomics for patient care:

1) A number of the Summit presentations on imaging were featured in the 39th International Prostate Cancer Update (IPCU) in January 2019, and its many participants identified imaging as the most promising emerging clinical area;
2) Summit Overview (presented by Dr. Shtern of AdMeTech at IPCU 2019) was published online by Grand Rounds of Urology. This video was requested by Whitney Tilton, Medical Director at VuMedi (YouTube for Physicians). VuMedi is an online community with over 220,000 registered physicians;
3) Members of the National Comprehensive Cancer Network's Panels on Detection and Treatment of PC will continue to be involved in Summit 2020; and
4) Participants of the VP Biden's Cancer Moonshot Program will continue to take part in the 5th Global Summit.

***Impact on Public Awareness/Opinion/Consumer Demand*:** Based on the 1st Global Summit, Boston Globe/STAT medical news presented a feature article, which has had a groundbreaking impact on public awareness of novel diagnostic tools and their transformational impact on the current state of patient care and eliminating the current concerns about PSA screening, including unnecessary procedures (5).

Other major media (e.g., Associated Press, National Public Radio, Boston Business Journal) also covered

Global Summit and the presented scientific data.

About AdMeTech Foundation: AdMeTech Foundation is a 501c3 non-profit organization, which has established the Manogram® Project and provides international leadership in creating a new standard of care for prostate cancer, including precision screening, diagnosis and treatment. To fulfill on this mission, the Manogram® Project has been leading design, development, management and implementation of groundbreaking programs in research, education, awareness and advocacy (6).

REFERENCES:

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