

Ayurveda and modern medicine in integrative medicine setting: the need for a molecular conversation

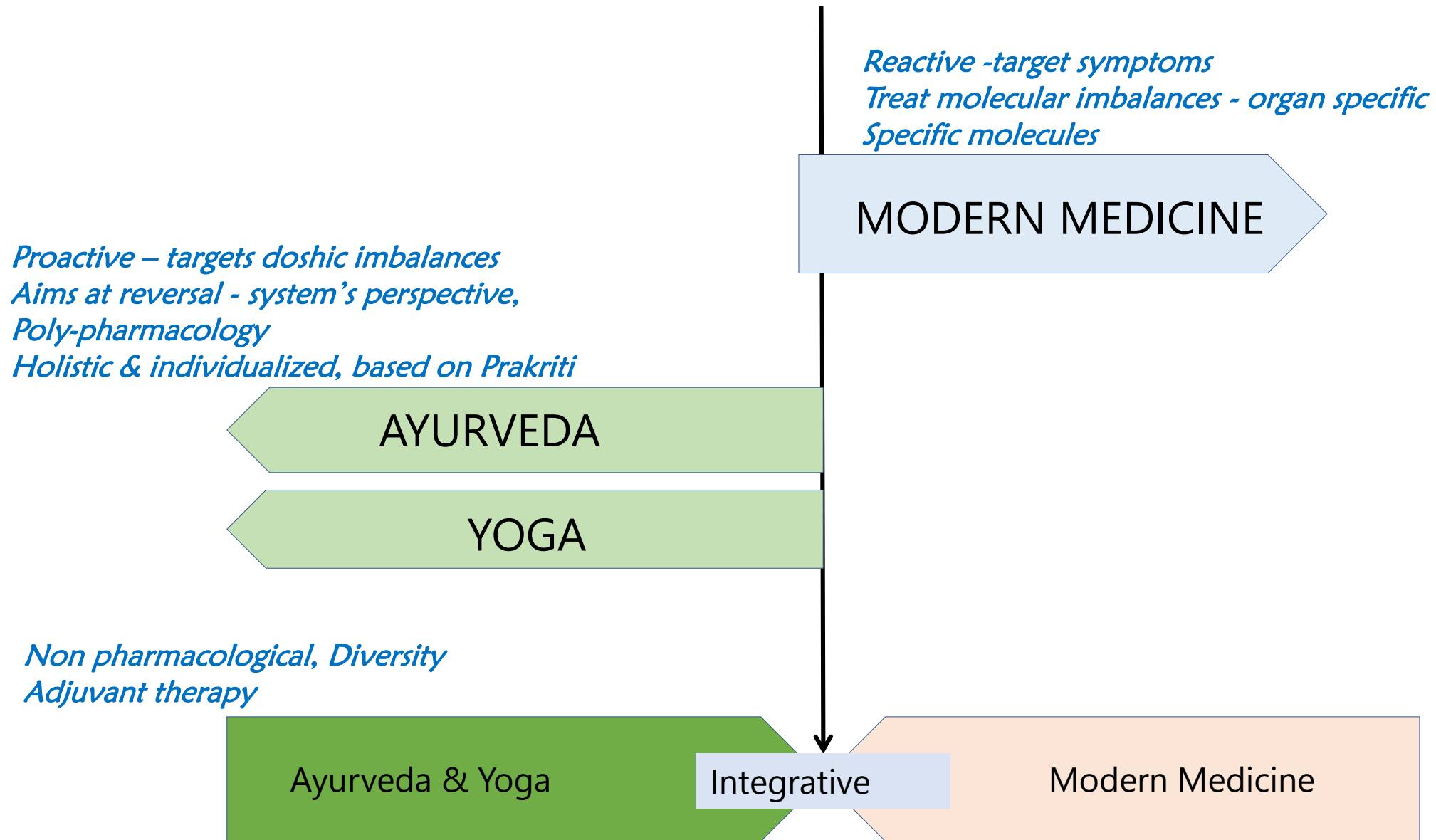
Expert Meeting on “Benefits and Barriers of Yoga Research”

Mitali Mukerji, PhD, FASc, FNASc
Professor & Head,
Department of Bioscience & Bioengineering
Faculty, School of Artificial Intelligence and Data
Science (AIDE)
Indian Institute of Technology Jodhpur



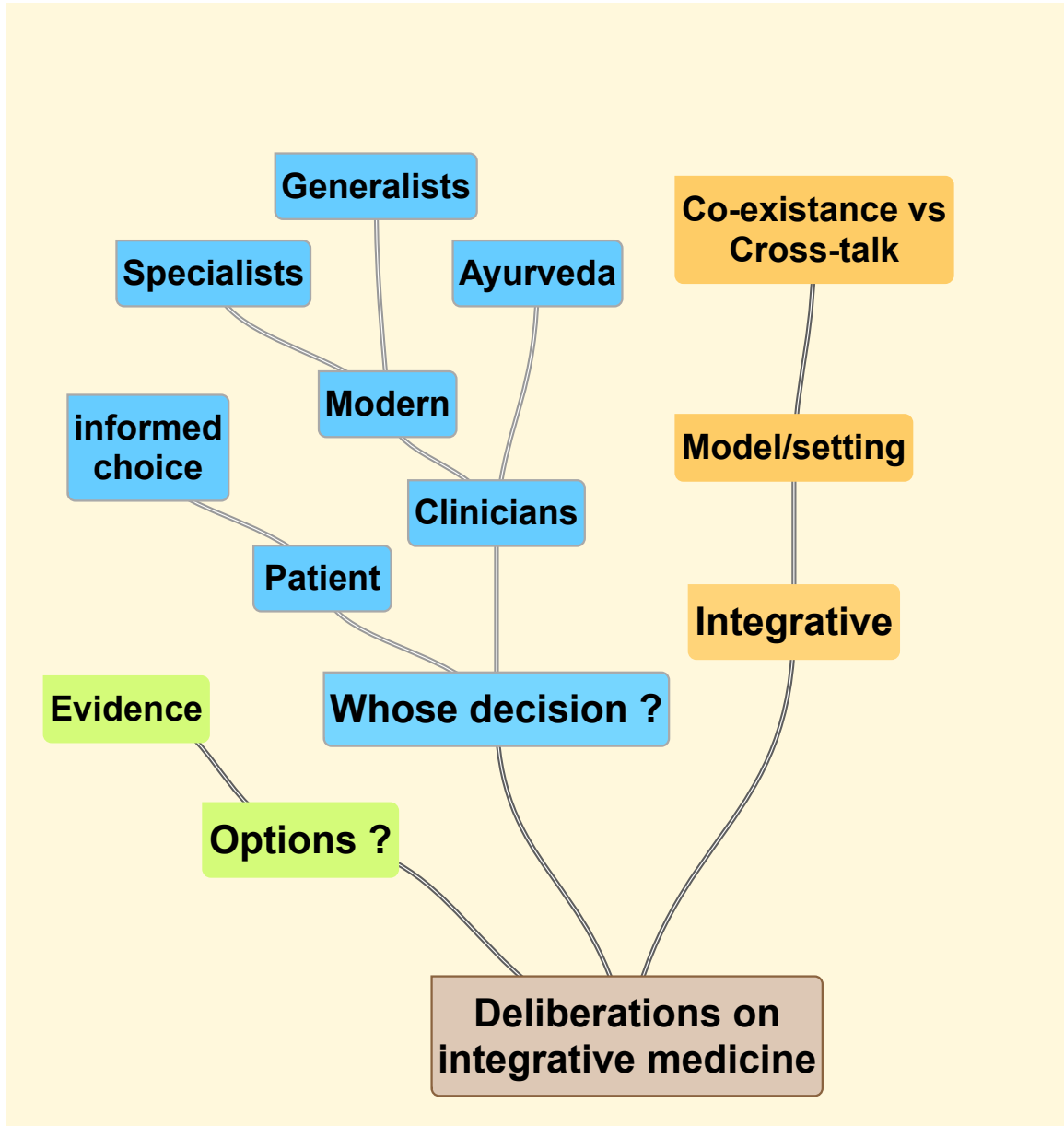
mitali@iitj.ac.in

Integrative medicine _ a win-win situation



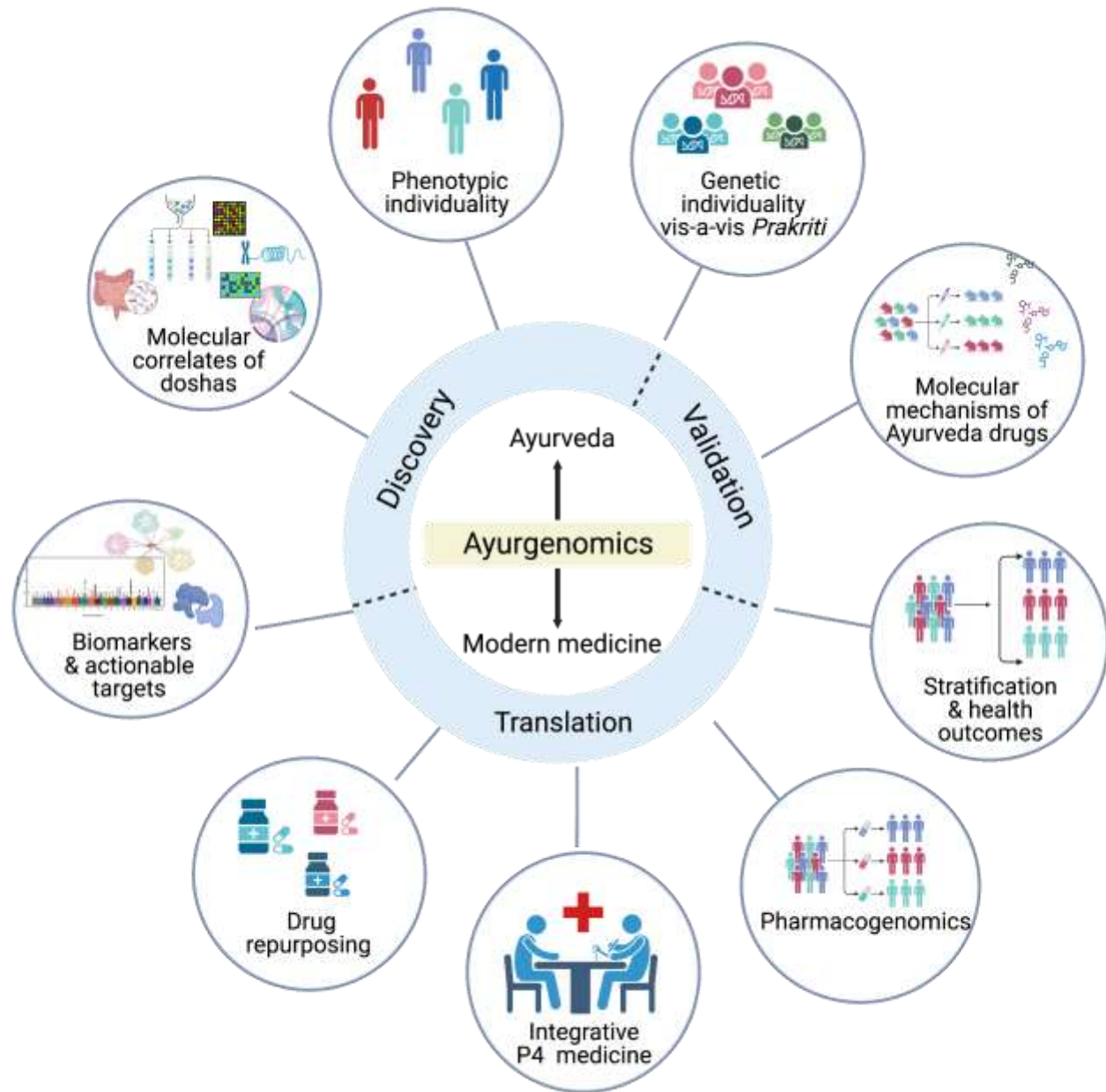
Interoperable, Complementary, synergistic, personalized options

Move towards Integrative medicine



Challenges

- Interoperability
- Objectivity
- Markers for assessment of outcomes in integration



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Ayurgenomics: A New Way of Threading Molecular Variability for Stratified Medicine

Tav Pritesh Sethi,[†] Bhavana Prasher,^{*,†} and Mitali Mukerji^{*,†}

ACS Chem. Biol. 2011, 6, 875–880

Ayurgenomics-based frameworks in precision and integrative medicine: Translational opportunities

Mitali Mukerji

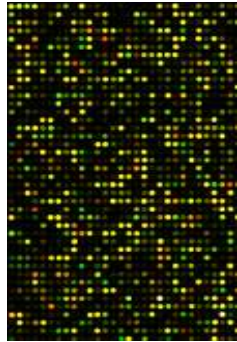
Department of Bioscience and Bioengineering, Indian Institute of Technology Jodhpur, Karwar, India and School of Artificial Intelligence and Data Science (AIDE), Indian Institute of Technology Jodhpur, Karwar, India

Cambridge Prisms: Precision Medicine, 1, e29, 1–14

Connectivity Map platform: Understanding response outcomes of treatments & mechanisms

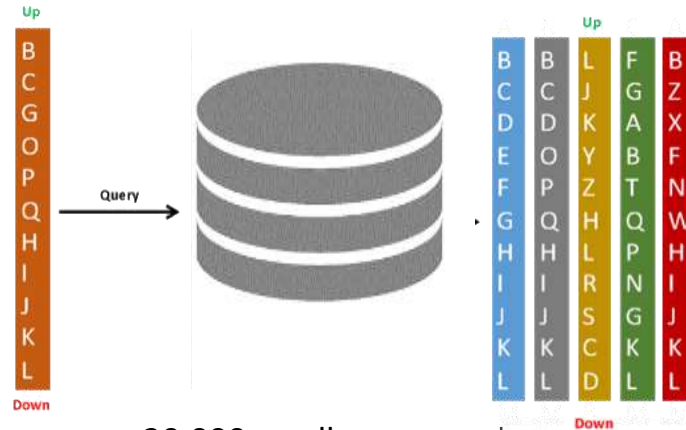
Transcriptomic signatures

Drug treated cell lines
Patient samples



Affymetrix[®] HTA 2.0
& RNA seq

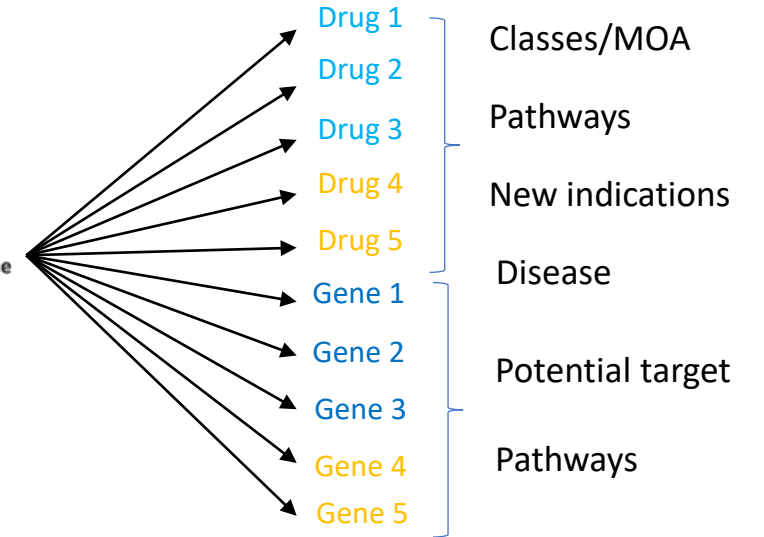
Perturbagens, Gene knockdowns/over-expression signatures



- 20,000 small compounds
- 1.3 Million instances
- L1000 platform, integrative

Clue.io, *Cell Sys.*, 2017; LINCS Cloud, *NAR*, 2014; CMAP, *Science*, 2007

Connectivity mapping



Drugs with positive connectivity score imply similar molecular signature

Traditional use of *Cissampelos pareira* L. for hormone disorder and fever provides molecular links of ESR1 modulation to viral inhibition

Madiha Haider, Dhvani Dholakia, Aleksha Panwar, Parth Garg, Vivek Anand, Atish Gheware, Khushboo Singhal, Dayanidhi Singh, Shaunak A Burse, M. Ghalib Enayathullah, Yash Parekh, Sushma Ram, Surekha Kumari, Anmol Kumar, Arjun Ray, Guruprasad R. Medigeshi, Kiran Kumar Bokara, Upendra Sharma, Bhavana Prasher, Mitali Mukerji

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Medicine and Therapies

RESEARCH

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Anti-SARS-CoV-2 potential of *Cissampelos pareira* L. identified by connectivity map-based analysis and in vitro studies

Madiha Haider^{1,2}, Vivek Anand^{1,2}, M. Ghalib Enayathullah³, Yash Parekh³, Sushma Ram³, Surekha Kumari^{4,5}, Anmol^{2,6}, Gayatri Panda⁷, Manjari Shukla⁸, Dhvani Dholakia^{1,2}, Arjun Ray³, Sudipta Bhattacharyya⁹, Upendra Sharma^{2,4}, Kiran Kumar Bokara¹, Bhavana Prasher^{1,2,7*} and Mitali Mukerji^{1,2,6,7*}

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Signatures of medications in meditation: A Connectivity map analysis of transcriptomes from an inner engineering retreat

Aditi Joshi^{1,2*}, Deep Patel^{1*}, and Mitali Mukerji^{1,2,6,7*}

Roadmap for developing the regulatory framework for Integrative medicine: Considerations

- Strategies for collaborative research between Ayurveda and modern medicine
- Capacity building for transdisciplinary research.
- Molecular signatures to assess potential synergies between modern medicine and Ayurveda in enhancing patient care
- Development of digital biomarkers for assessing patient outcomes & individualized/stratified treatments
- Research and technology needs for bridging the knowledge gap
- Framework for design of clinical trials in integrative medicine settings
- Regulatory frameworks for integrative medicine
- Ethical practices, patient safety and treatment efficacy