Institute for Precision Health (IPH)	
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Role(s)	• The Institute for Precision Health (IPH) serves its community by fostering both discovery-based and hypothesis-driven research, educating and training students, and moving proven ideas out of the lab and into broader use. • Institute members conduct research into the molecular, cellular, and environmental factors underlying each person's health, particularly those in underserved populations, and work to ensure new discoveries, data, and technologies benefit all populations. • To advance its goals, the institute engages scientists, engineers, clinical practitioners, and industry partners in five cross-cutting, multidisciplinary research themes: Molecular Mining, Molecular Recognition, Microbiome and Human Health, Micro- and Nanoscale Biomedical Instrumentation, and Point-of-Use Platforms. • IPH also manages and staffs the Center for Bioanalytic Metrology, an NSF Phase I Industry-University Cooperative Research Center, on behalf of Notre Dame, Indiana University Bloomington, Purdue University, and the center's industry partners.
Mission	The Institute for Precision Health at Notre Dame seeks to prevent and treat disease, promote wellness, and reduce health disparities by developing new tools to understand human variability at the molecular and cellular levels.
History	2008 – Launched as the Advanced Diagnostics & Therapeutics (AD&T) Initiative through an internal Strategic Research Investment by the university 2019 – AD&T reclassified as a university research center 2019 – Center for Bioanalytic Metrology (CBM) launched 2020 – AD&T expands and rebrands as the Institute for Precision Health
Org	Steering Committee of ten faculty members Five faculty theme leaders 72 affiliated faculty from across disciplines Leadership: Paul Bohn: Faculty Director (pbohn@nd.edu) Prakash Nallathamby: Assoc. Director for Research (Prakash.D.Nallathamby.1@nd.edu) Arnie Phifer: Associate Director (aphifer@nd.edu)
Board	IPH Advisory Board *(in planning)* CBM Industry Advisory Board includes representatives from: AbbVie, Agilent, Bristol-Myers Squibb, Corteva Agriscience, ExxonMobil, Genentech, Indiana Biosciences Research Institute, Lilly, Merck, Pfizer, Sartorius, Takeda
Finance	Funding from NSF, NIH, and other government sources Funding from industry partners Annual endowment distributions Annual support from the university

Data Source	N/A
Data Access	N/A
Tech Capabilities	IPH faculty, students, and partners can access a wide range of tools and capabilities through Notre Dame's comprehensive research cores, including the Analytical Science and Engineering Core Facility
Projects	IPH supports a wide range of projects that advance the institute's research themes. Molecular Mining: The ability to identify and characterize the molecules of life is an essential scientific challenge. Modern analytical techniques provide unprecedented breadth and depth, but the ability to detect does not necessarily translate into structural identification or understanding of how molecules function, interact, and change. Progress will be made by developing new methods of identifying complex molecules at sufficient bandwidth to enable real-time identification, and these methods will require advanced instrumentation with unprecedented sensitivity, throughput, and spectral resolution. Molecular Recognition: In efforts to improve the efficacy of diagnostic assays and therapeutic agents, precise molecular recognition of disease-specific markers remains a major hurdle. Innovations in the development of instrumentation, imaging modalities, and spectroscopic techniques support and empower new approaches, enabling bias-free routes to achieve a holistic understanding and treatment of disease states with spatiotemporal precision. Microbiome and Human Health: Current understanding has just scratched the surface of the deep and complex connections between humans and the diverse microbial communities that cohabitate the human biosphere—in the gut and on the skin, inside buildings, in the soil, and on every surface imaginable. Great strides have been made through discovery-based science. However, in order to design rational hypotheses for new experimental approaches, a better understanding is needed of the specific mechanisms by which the microbiome mediates the health and well-being of individuals and how to exploit this understanding for improved microbiome-based diagnostics and therapeutics. Micro- and Nanoscale Biomedical Instrumentation: Seminal advances in the miniaturization of instrumentation has led to a growing range of smart, accurate, and low-powered biomedical devices and portable biomolecular diagnostics. Microscale architectures make it possible to address ultralow fluid volumes and achieve rapid assays, while nanoscale devices do this in addition to accessing new physical phenomena, e.g. permselectivity, not present in larger structures. Research in this theme includes advanced optical and terahertz imaging, in vitro and in vivo sensor applications, and biomedical instrumentation development with the ultimate goal of rendering sensors capable of personalized bioassays supporting therapies targeted to the individual. Point-of-Use Platforms: Point-of-use platforms seek to bring bioanalytical assays to the individual, thus enhancing the speed with which results are available to caregivers and empowering individuals to exert more control over their own health and wellness. Key challenges include: (a) adapting state-of-the-art bioassays, such as nucleic acid amplification and detection, microfluidic device design, and digital fluidics methods, so that they yield timely, point-of-use diagnoses, and (b) creating smart systems that can translate laboratory innovations into technically effective devices engineered to survive operation in the field. Additional hurdles to implementation may be posed by differing legal, regulatory, political, and social constraints imposed in the local environment.
Future Focus	N/A
Talent Development	• Through annual competitive competitions, IPH supports graduate students and their projects and research experiences for undergraduates.
Data Sharing Agreements	N/A
Programs/ Publications	N/A
Resources	N/A