Accelerating Medicines Partnership® Autoimmune and Immune-Mediated Diseases (AMP® AIM) Program

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National Institute of Arthritis and Musculoskeletal and Skin Diseases

AMP by the Numbers



\$772M **Total Investment** Years 15 **NIH Institutes and Non-Profits**

Cross-Institute Programs

As of June 2022

Slide adapted from FNIH

NIAMS 🔕 🚓 🦁 🌈

AMP Topics



AMP RA/SLE: Goals to identify prioritized targets for RA and SLE

Disease 'Deconstruction'



Identify cells of interest



Identify and track marker using single-cell analytics and crossvalidate expression in subsets



Identify intracellular pathways, cell subset and state, ligand/receptor expression, and clinical correlations

Identify cell populations and effector pathways

- Biomarkers
- Targets for therapy
- Molecular classifications of disease

Transformative approach toward precision medicine

- Infrastructure for target tissue research biopsies
- **Disaggregation** standard operating procedures
- Rapidly evolving single cell technologies
- New bioinformatics strategies







AMP RA/SLE approaches now applied widely with broad impact

Slide adapted from FNIH

AMP AIM Builds on Key Outcomes of AMP RA/SLE



NIAMS

How Disease 'Reconstruction' Leads to Deliverables

- Discover how innate and adaptive cells of the immune system and tissue resident cells interact to drive inflammation and clinical disease
- Map anatomic locations, neighborhood pathology, cellto-cell and receptor-to-ligand interactions
- Define how these cell and molecular pathologies are common across diseases and across tissues

- Advance understanding of how cell-cell interactions activate specific mechanisms of disease through spatial analytics
- Accelerate discovery of new mediators of disease through "interactome" analytics
- Integrate at a systems level across tissues and diseases, combining the above with epigenetics and genomics to identify target molecules in causative pathways of disease

AMP AIM Vision

Index and map cells and pathways in



Female:Male

• Discover how these pathways and cells interact through new analytics in different diseases to identify *specific and shared disease mechanisms*

Images courtesy of AMP AIM investigator Dr. Judith James and elsewhere NIAMS

AMP AIM Tools and Processes



AMP AIM has Many Partners



Slide adapted from FNIH



www.niams.nih.gov/about/about-the-director/letter/new-pilotprogram-will-mentor-leaders-and-advance-womens-health



Team Science Leadership Scholar Program to Advance Women's Health Connects the Strengths of NIAMS and ORWH

NIAMS

- Research on autoimmune diseases affecting women
- Career development
- Team science infrastructure through AMP AIM

Team Science Leadership Scholar Program

- Advance leadership and mentoring skills of promising women's health researchers committed to working within a large network of stakeholders
- Provide opportunities to leverage expertise of professionals with diverse knowledge and skill sets to <u>address complex</u> issues

ORWH

NIAMS

- Research on the health of women
- Career development

Goals for Team Science Leadership Scholars in

Women's Health

- Leverage AMP AIM infrastructure for new clinical, biologic or analytic questions
- Integrate with AMP AIM working groups and disease teams
- Provide team science and leadership training
- Prepare the next generation of women's health leaders in rheumatic and skin diseases



Graphic adapted from AMP AIM investigator Dr. Judith James

Team Science Leadership Scholars in Women's Health Proposal

- National search for candidates
- 3-4 Scholars selected for 2-3 years
 - Supported by ORWH and the NIH Office of Data Science Strategy (ODSS)
- Responsibilities:
 - Lead projects that are synergistic with AMP AIM goals
 - Gain training and experience in leadership and mentoring
 - Interact with senior and junior investigators within the Network and with scientists and leaders from industry and non-profit organizations represented on the AMP AIM steering committee



