

# MIDAS

## Models for Infectious Disease Agent Study

National Institute of General Medical Sciences  
National Institutes of Health  
Department of Health and Human Services

# Agenda

- ▶ NIH Context
- ▶ Purpose
- ▶ Organization of MIDAS
- ▶ Roles of Participants
- ▶ What is the Steering Committee Going to Do Anyway?

# NIH Biodefense

## Involves all Institutes and Centers

### ▶ Concerns

- Biological / Infectious Agents and Toxins
- Chemical Agents
- Nuclear and Radiological Agents
- Mental and Behavioral Health

### ▶ Focuses on

- Basic Research
- Diagnosis
- Intervention
- Education and Training

# NIAID - \$1.6 billion

- 8 Regional Centers of Excellence
- 11 National and Regional Biocontainment Labs
- 5 Cooperative Centers for Translational Research on Human Immunology and Biodefense
- Research on Category A microbes
- Genomic sequencing
- Vaccine Development
- Drug Development
- Diagnostics

# Other Institutes

- Genomics and Proteomics
  - ▶ NHGRI, NLM, NIGMS, NIAID,...
- Informatics
  - ▶ NLM, NCI, NIGMS, NIAID
- Diagnostics and Imaging
  - ▶ NIBIB, NCRR, NIDND, NIDCR
- Clinical Resources
  - ▶ NCRR, NIGMS, NHLBI, various population resources
- Modeling
  - ▶ NIGMS

# MIDAS

will consist of an informatics center and network of multidisciplinary scientists conducting computational and mathematical research to improve the ability to detect, control, and prevent emerging infectious diseases

# Purpose of MIDAS

- ▶ Improve the nation's ability to respond to biological threats promptly and effectively by
  - ▶ Developing useful computational tools and models of emerging infectious diseases
  - ▶ Building models in response to real or anticipated outbreaks
  - ▶ Making tools and models available to policymakers, public health professionals, and researchers

# Principles

- ▶ Partnership between NIH and scientific community
- ▶ Pilot program – opportunity to redesign
- ▶ Multidisciplinary
- ▶ Small interacting research groups
- ▶ Sophisticated informatics group
- ▶ Many opportunities for interaction and sharing



# A Word About Data

- ▶ MIDAS does not fund primary laboratory or clinical research
- ▶ MIDAS does support research using existing information, datasets, or simulated data
- ▶ It is a **requirement** that all data be deposited in the Informatics Center
- ▶ It is a **requirement** that all products be deposited and made available

# Scientific Themes

# Scientific Objectives

- Development, validation, and implementation of models for
  - ▶ Transmission of bioterrorism agents or naturally occurring infectious diseases
  - ▶ Release, spread, and detection of naturally-occurring and bioterrorist agents
  - ▶ Differential diagnosis of natural outbreaks and bioterrorist attacks

# Scientific Objectives

- ▶ Development, validation, and implementation of models for
  - ▶ Distribution and allocation of resources in response to an outbreak
  - ▶ Evaluation of the long-term consequences of response strategies
  - ▶ Effects and efficacy of interventions

# In Case Of Emergency...

- NIGMS may redirect the MIDAS network to conduct research related to scenarios, policy decisions, or events involving an emerging outbreak.
- The Steering Committee will be involved in constructing the appropriate questions and making recommendations to NIGMS.

# Organization of MIDAS

# Cooperative Agreement (U01)

NIH/NIGMS  Research Scientist

Scientist has primary leadership and authority to manage project.

NIH acts as a **partner** and has considerable involvement in setting directions and priorities.

# MIDAS

**Research Group**  
**Emory University**

**Research Group**  
**Johns Hopkins University**

**Informatics Group**

**RTI**

**Research Group**

**Los Alamos National Labs**





# MIDAS

NIGMS Council and  
Advisory Group

MIDAS Steering Committee

NIGMS

MIDAS Network  
Research Groups

Informatics Group



# Research Groups

- Will conceive, develop, and conduct research relevant to developing mathematical and computational models of emerging infectious diseases
- Must identify data liaison person to interact with Informatics Group
- Must use standard exchange protocols
- Must comply with intellectual property agreement

# Informatics Group

- Will construct and implement a database and interface for MIDAS information and tools
- Will monitor data for quality, accuracy, completeness, and non-redundancy
- Will facilitate comprehensive sharing of data, models, and tools
- Will generate simulated data
- Will test and validate models

# NIGMS Council Advisory Group

- ▶ Advises NIGMS on overall program direction and progress

# Steering Committee

- ▶ Is the main governing body
- ▶ Consists of program directors of the informatics and research groups, NIH staff, and outside consultants
- ▶ Develops and oversees policy
- ▶ Sets milestones for the Network
- ▶ Sets standards for information management
- ▶ Alerts NIGMS to scientific opportunities, emerging needs, and impediments
- ▶ Considers the views of other researchers
- ▶ Establishes subgroups as needed

# Monitoring

- The Network will meet monthly by conference call
- The Steering Committee will meet at least annually
- Additional meetings can be added as needed.