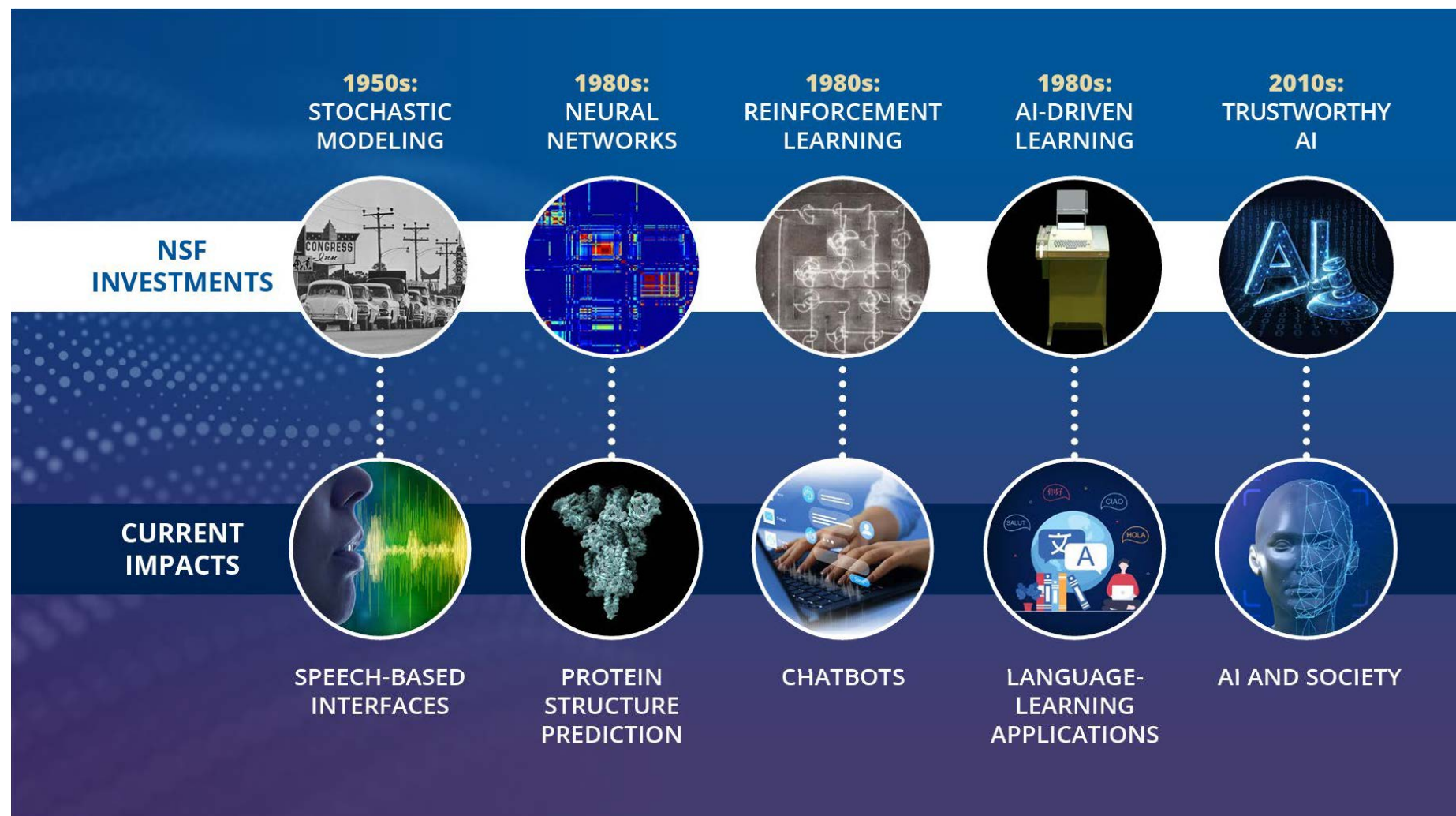




The Role of NSF in Enabling Super Intelligence-Driven Advances in Biological Sciences

Theresa Good, Directorate Head
Biological Sciences
U.S. National Science Foundation

NSF Support for Artificial / Super Intelligence



NSF BIO Support for Super Intelligence (SI)



SI-usable datasets for biological research



New SI to power biological discovery



SI - BIO workforce development

Datasets for Biological Research

Production and Analysis

Data Generation



Protein Data Bank



NSF National Ecological
Observatory Network

Data Synthesis



NSF Environmental Data Science
Innovation & Impact Lab



NSF National Synthesis Center for Emergence
In the Molecular and Cellular Sciences



NSF National Synthesis Center for
Organismal Resilience

Unlocking Dataset Value for AI (SI) -Enabled Scientific Discovery, NSF 26-512

New SI to Power Biological Discovery

BIO Infrastructure Innovation for Biological Research

Supporting design or improvement of research tools and methods, including in bioinformatics

- Advanced design of biomaterials, such as antimicrobial peptides
- Software to predict protein binding to DNA or RNA
- Data and SI forecasting framework understanding urban biodiversity



Advancing Research at the Intersection of Biology and Super Intelligence / Machine Learning

Promoting biological discovery through use of existing SI/ML or developing new SI/ML methods using biological data

- New tool incorporating molecular motion data into models for protein engineering
- Understanding brain function by SI-aided computational analysis of connectomes
- Designing plant rhizobacterial communities for sustainable agriculture



Funding SI to Power Biological Discovery

Dear Colleague Letter: Unleashing a new age of SI-enabled scientific discovery through the [Genesis Mission](#) (NSF 26-023)

Purpose

Invites researchers to submit proposals through existing NSF funding opportunities that support the Genesis Mission – a coordinated federal effort to accelerate SI-enabled scientific discovery and address national science and technology priorities.

NSF Focus Areas

Leveraging and Building SI for Science

Research that uses SI for science or seeks to build the foundations of SI-accelerated scientific discovery.

Building Foundations for S&T Challenges

Research that supports one or more of the Genesis Mission National Science and Technology Challenges.

Growing Workforce and Capacity in SI for Science

Proposals that advance workforce and capacity-building in SI for science.

GenesisMissionNSF@nsf.gov



SI-BIO Workforce Development



- NSF Research Experiences for **Undergraduates** (NSF REU)



- NSF **Graduate** Research Fellowship Program (NSF GRFP)



- NSF **Postdoctoral** Research Fellowships in Biology (NSF PRFB)



- NSF **Faculty** Early Career Development (NSF CAREER)
- NSF Mid-Career Advancement (NSF MCA)

Research and Training Focus:
Intersection of SI and
Biological Sciences
to Strengthen and Safeguard
Biotechnology Innovations





Thank You!

