

interactive visualization and a one-of-a-kind human tissue properties database to develop medical simulation tools that look and act like parts of the human body.

- Placeholder for Hypersonics
- MnDRIVE is a partnership between the University and the State of Minnesota that aligns areas of University strength with the state's key and emerging industries to produce breakthrough research that addresses our state and society's greatest challenges. Starting in 2013, \$17.5 million in state funding was authorized each year for research across the four MnDRIVE research areas: robotics, sensors, and advanced manufacturing; global food ventures; advancing industry, conserving our environment; and discoveries and treatments for brain conditions. Funding has catalyzed projects involving more than 980 researchers across three campuses (Twin Cities, Duluth, and Morris), including more than 100 departments within dozens of colleges.

*see appendix for further University of Minnesota information.

Mayo Clinic Partnerships

The cornerstone of Mayo Clinic's rich heritage and commitment to military service can be traced back to the earliest days, starting with Dr. William Worrall Mayo's service to the U.S. Army and his medical contributions during the Civil War. This tradition of service is part of Mayo's strategic makeup and core beliefs and continues today through Mayo Clinic's efforts directly related to training, supporting and healing our country's military members.

"Medicine gives only to those who give, but her reward for those who serve is 'finer than much fine gold.' " — Charles H. Mayo, M.D.

The Mayo Clinic Department of Defense (DOD) Medical Research Office, which oversees Mayo's portfolio of DOD-funded research, has evolved from a long and successful partnership with the U.S. government. Today, dozens of Mayo researchers receive funding for special projects that are advancing areas of national health, sustainability, security and education by developing new technologies and solutions. Through new applications of advanced science and medicine, Mayo researchers have produced hundreds of solutions to address the challenges faced by the Department of Defense (DOD) in keeping our country and the military operating efficiently and safely.

The goal of the Mayo Clinic Strategic Funding Office for Research — the primary liaison of the Mayo Clinic DOD Medical Research Office — is to link the research needs of the DOD with Mayo Clinic research interests and secure funding for research and development. This research office promotes the multidisciplinary strength of Mayo's research faculty and the dynamic application of health-related innovation and technology.

*see the appendix for list of current initiatives.

To work with Mayo Clinic Ventures is to work with some of the most esteemed medical scientists in the world. The finest minds, focused on a responsibility to make medicine better, collaborate across specialties to solve complex research questions. Such a close integration makes it possible to quickly bring proven diagnostics and therapeutics to patients. Through industry collaborations, Mayo Clinic's

innovative technologies are spread worldwide. Mayo Clinic research personnel are conducting some 8,000 IRB-approved human studies at any given time. Our scientists publish more than 5,500 research and review articles in peer-reviewed journals each year. An annual research budget of \$365 million includes Mayo's own investments in research, philanthropic support, royalties from technology commercialization and external funding.

These robust research efforts — and the resulting discoveries — come about as a result of Mayo's integrated medical group practice. Mayo Clinic's vast research capabilities not only allows for it to have specialties, but to be able to conduct specific research on topics that other hospitals do not have staff or resources for. Because Mayo Clinic is so large, we have not only specialties and subspecialties, but also sub-subspecialties. ~~We Mayo combines~~ this expertise in patient care with medical research. Along with full-time scientists, these leaders in medicine identify research questions — and answers that may not be unraveled anywhere else. Mayo Clinic identifies the need first and works its way backward to solve the issue. This process increases the probability of creating solutions that is translatable to the real world because Mayo Clinic uses research and education as the scientific underpinning for improvements in patient care. "We have a disciplined, systematic approach for taking discoveries and translating them into clinical practice, whether it's a new device, drug treatment, therapy, health informatics or even health information," says Clark.

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This approach increases the likelihood that Mayo Clinic discoveries will address actual patient needs, and enhances the discovery's commercial appeal. For example, Mayo will create a new device or technology that makes it easier to do a specific surgery. If that benefits our patients, there is likely a market for it. There is a discipline at Mayo Clinic for moving a discovery not just into practice, but also into the marketplace. Because we have an expectation that discoveries and research will be relevant to patient care, we bring forward significant opportunities for commercialization.

Regional Accelerators

Adventium Labs solves hard problems in the areas of cyber security, system engineering, and automated reasoning. For cyber security, Adventium Labs protects computers and networks from internal and external cyber-oriented threats. For automated reasoning, Adventium Labs develops model-based reasoning and mathematical analysis technology to automate difficult or error prone tasks for humans. For systems engineering, Adventium Labs develops and applies formal processes to design, model, and analyze complex cyber physical systems including medical devices, avionics, process control systems, and spacecraft.

Adventium's business model is to develop technology to the advanced prototype stage (Technology Readiness Level (TRL) 6-7) at which time ~~we Adventium seeks~~ open source venues and/or licensing partners to transfer ~~our~~ work to broader use. ~~We Adventium~~ also commercializes ~~our-its~~ research.

Gener8tor is a nationally ranked accelerator that invests in high-growth startups. Three times a year ~~we Gener8tor invests~~ up to \$140K in each of five startups who receive a concierge experience during ~~our a~~ 12-week accelerator program. ~~gener8tor Gener8tor~~ supports the growth of these startups through ~~our~~ its network of experienced mentors, technologists, corporate partners, angel investors and venture capitalists.