

The 2nd SSOM Biomedical AI and Computation Idea Competition (BACIC)

2025

Request for Applications

Background: AI and computation are gaining importance at a fast pace in biomedicine and healthcare. The USD Sanford School of Medicine (SSOM) encourages the development and application of novel, cutting-edge computation and artificial intelligence (AI) for biomedical research, medical education, and health care. This Biomedical AI and Computation Idea Competition (BACIC) aims to stimulate new ideas and innovative approaches in biomedical computation and AI among faculty, students, and trainees and to promote collaborations between SSOM, the Department of Computer Sciences (CS) at USD, and the Department of Electrical Engineering & Computer Science (EECS) at South Dakota School of Mines and Technology (SDSMT).

The focus of this competition: SSOM intends to promote conceptualization, development, application and collaboration of biomedical and clinical computation and AI for the ongoing digital transition in biomedicine and healthcare. BACIC is the first step of this ambitious endeavor and focuses on novel computational or AI related concept, model, methodology, analytics, approach, workflow, and/or product for basic, translational, pre-clinical, or clinical research, or for medical education and/or associated educational research, broadly defined. BACIC emphasizes creativity and exploration in ANY *in silico* or hybrid wet-dry lab format. Pilot research funds will be awarded to support a research project at SSOM (see details below).

Priorities: No preliminary data or prototype product is required. Priorities will be given to applications with widespread impact or target population in biomedical research, healthcare, and clinical sciences through a priority score. Applications with preliminary result(s) or prototype product(s) showing feasibility may receive higher priority scores. **Collaboration is not required.** For collaborative projects, the SSOM personnel should serve as the principal investigator(s). Collaborative projects, especially those collaborating with CS at USD or EECS at SDSMT, may receive higher priority scores. Proposals should clearly define an innovative computational, AI, and/or hybrid dry-wet idea, concept, model, method, strategy, approach, workflow and/or product, ideally delineating a roadmap for future expansion into a larger collaborative research project that will lead to the submission of an extramural grant application. Prior winners of this competition are welcome to submit a significantly different proposal to compete again; however, applications will not receive any priority score in this case.

Eligibility: A dry-lab component, broadly defined, in the study design is required. Pure wet-lab approaches will not be eligible. This competition has two categories: 1) faculty level and 2) student/trainee level (please see below). The proposed project **MUST** focus on innovative computation, AI, or any *in silico* or hybrid wet-dry lab ideas/methods/approaches/products related to biomedical fields, healthcare, clinical medicine, or medical education, such as advanced bioinformatics, computer modeling and simulation, AI-based prediction, app or interface promoting medical student learning, etc., broadly defined. Questions about the eligibility can be directed to Dr. William C.W. Chen (William.Chen@usd.edu).

- 1) **Faculty level competition:** Open to all SSOM full-time faculty members (tenure and

non-tenure track) at all academic ranks.

- 2) **Student/Trainee level competition:** Open to all SSOM medical and graduate students, postdocs, and clinical residents/fellows at all levels.

Award Description:

- Award number and amount:
 - For the faculty competition, ONE (1) award of **\$10,000**.
 - For the student/trainee competition, TWO (2) awards of **\$2,500**.
- Notice of award: by the end of January or early February 2026
- Award start date and duration: from the time of the award announcement through June 30, 2027.
- Award condition: The entire awarded amount will be available immediately to the awardee for personnel, lab supply, equipment, computer, and/or other eligible research or academic purposes or activities.
- Award obligation: The awardee is obliged to provide a 1-page report summarizing the progress and/or outcome achieved under this award by December 31, 2026.

Application Specifics (NIH format):

- **Cover letter: 1 page maximum** (Arial font, 11-point type, single-spaced, 0.5-inch margins). Please briefly explain, in lay language to non-experts, the novelty and/or innovation of your proposed computational, AI, and/or hybrid idea/concept, model/method, strategy/approach/workflow, product, or any significant improvement or advancement from existing approaches, the importance/significance, target population, and/or potential impact of your proposal, how this proposal correlate to your existing research or academic direction(s), and if applicable, any collaboration with faculty or trainee at USD CS, SDSMT EECS, or other institution/department for the proposal.
- **Research proposal: 2 pages maximum** (excluding references, Arial font, 11-point type, single-spaced, 0.5-inch margins). Please note that the research proposal should include concise sections that cover:
 - 1) A clear and concise description of the proposed computational, AI, or hybrid idea/approach/product and its novelty/innovation that can be perceived by scientists not in your field.
 - 2) The significance, target population, and/or potential impact of the proposed research, including samples/datasets/databases and any associated sources to be created/developed/used if applicable. The applicants are welcome to disclose or discuss any potential difficulty to access required resources if any of those are not publicly available.
 - 3) Implementation strategy, computational algorithm/model/pipeline, and/or research approach/workflow for how the expected outcome or product will be generated and interpreted, based on the proposed biomedical computational, AI, or hybrid idea/approach.
 - 4) How this novel or improved biomedical computational, AI, or hybrid idea or approach can be applied or integrated into a larger system/approach/project to solve biomedical research, healthcare, clinical, or medical education problems, and to advance the applicant's research/academic agenda.
 - 5) Please note that **no preliminary data is required**.
- **Concise Budget justification: 0.5 page maximum** (Arial font, 11-point type, single-spaced, 0.5-inch margins). Please briefly describe how the seed fund will be spent if awarded.

- **Current NIH style Biosketch: 5 pages maximum** (Arial font, 11-point type, single-spaced, 0.5-inch margins). Please include current funding support and a brief description of any overlap between any current/pending support and the submitted proposal.

Submission Receipt Date: Proposals must be **received by 5 PM CT on December 15, 2025**. Applications should be submitted as a single PDF and send to Dr. William C.W. Chen (William.Chen@usd.edu).

Questions: For administrative questions or concerns, please contact Dr. William Mayhan, director of South Dakota Biomedical Computation Consortium (William.Mayhan@usd.edu). For financial questions or the rules regarding the award usage, please contact Laura Wiemers, SDBCC financial officer (laura.wiemers@usd.edu). Please direct technical, scientific, or any other questions to Dr. William C.W. Chen, founder of BACIC (William.Chen@usd.edu).

Scientific Review: Applications will be reviewed by a committee composed of internal and external experts in related fields, avoiding any direct conflicts of interest.

Award Announcement: Awardees will be announced by the end of January or early February 2026 with funds available immediately with no restriction of usage for academic purposes. Award should be spent by June 30, 2027.