

# **Announcement of Requirements and Registration for the 2020 Design by Biomedical Undergraduate Teams (DEBUT) Challenge**

DEPARTMENT OF HEALTH AND HUMAN SERVICES

NATIONAL INSTITUTES OF HEALTH

National Institute of Biomedical Imaging and Bioengineering

Authority: 15 U.S.C. 3719

Date of Announcement: January 13, 2020

## **DESCRIPTION**

### **Subject of the Challenge:**

The NIBIB DEBUT Challenge solicits design projects that develop innovative solutions to unmet health and clinical problems. Areas of interest for the biomedical engineering projects include, but are not limited to: diagnostics, therapeutics, technologies for underserved populations or low-resource settings, point-of-care systems, precision medicine, preventive medicine, technologies to aid individuals with disabilities, and HIV/AIDS prevention and care. In addition to prizes where there is no restriction on the healthcare technology being developed, two categorical prizes will be awarded on: 1) HIV/AIDS prevention and care, and 2) healthcare technologies for underrepresented populations and/or for low-resource settings, with funds from the NIH Office of AIDS Research (OAR) and the National Institute on Minority Health and Health Disparities (NIMHD), respectively. Student Teams participating in capstone design projects are especially encouraged to enter the Challenge.

To support and expand the DEBUT Challenge, the NIBIB has joined forces with VentureWell, a not-for-profit leader in funding, training, coaching and early investment that brings student innovations to market. This public-private partnership on DEBUT allows student teams to compete for prizes offered by both NIBIB and VentureWell by submitting one application.

Student Teams entering the Challenge will have the option to have their entries also considered for prizes offered by VentureWell. VentureWell prizes will be selected and awarded by VentureWell following a separate judging process. The rules for the VentureWell prizes and the additional submission components that are required to compete for them can be found at: <http://venturewell.org/students/debut/guidelines>.

**Partners:**

NIH Office of AIDS Research (OAR)

National Institute on Minority Health and Health Disparities (NIMHD)

VentureWell

**Dates:**

- Challenge Launch: January 13, 2020
- Submission Period: January 13, 2020 to June 1, 2020, 11:59 PM EDT.
- Judging Period: June 8, 2020 to August 23, 2020
- Winners announced: August 25, 2020
- Award ceremony: October 2020, Biomedical Engineering Society Conference, San Diego, California

**Statutory Authority to Conduct the Challenge.**

NIBIB is conducting this Challenge under the America Creating Opportunities to Meaningfully Promote Excellence in Technology, Education, and Science (COMPETES) Reauthorization Act of 2010, as amended [15 U.S.C. § 3719].”

The general purpose of NIBIB is the conduct and support of research, training, the dissemination of health information, and other programs with respect to biomedical imaging, biomedical engineering, and associated technologies and modalities with biomedical applications. NIBIB is conducting this challenge under the America Creating Opportunities to Meaningfully Promote Excellence in Technology, Education, and Science (COMPETES) Reauthorization Act of 2010, 15 U.S.C. 3719. In line with these authorities, by challenging undergraduate students to identify

unmet clinical needs and develop innovative solutions for them, NIBIB targets the education of biomedical engineers who have the background, skills, and confidence to make outstanding contributions to biomedical technologies. Engaging undergraduate students to work in teams to design, build and debug solutions to real-world problems/needs in healthcare not only prepares them to function effectively in their future work environment, but also yields novel, innovative biomedical tools that can transform healthcare.

## **PRIZES**

### **Amount of the Prize:**

The 1st (“The Steve H. Krosnick Prize”), 2nd, and 3rd place prizes will be \$20,000, \$15,000, and \$10,000, respectively. Five honorable mentions will be selected to receive \$1,000 each.

Above prizes have no restriction on the topic of the healthcare technology solution being proposed. In addition, two categorical prizes will be offered:

- 1) The HIV/AIDS Prize for \$15,000 awarded to the strongest entry developing engineering-based/technological solutions to current HIV/AIDS prevention and/or health care problems; and
- 2) The Healthcare Technologies for Low Resource Settings Prize for \$15,000, awarded to the strongest entry developing technology solutions to meet the healthcare needs of underrepresented populations or to advance healthcare in low-resource settings. (Low resources settings include, but are not limited to, settings located in the United States, U.S. territories or possessions.)

For each winning team, contributions of all team members will be recognized in announcements, plaques or certificates, and the monetary prize will be distributed equally among the prize-eligible Student Team members, i.e., students who are either citizens or permanent residents of the United States. Each prize-eligible member of the winning Student Teams must provide his/her bank information to enable electronic transfer of funds.

Winning Student Teams will be honored at the NIBIB DEBUT Award Ceremony during the 2020 Annual Meeting of the Biomedical Engineering Society (BMES) in San Diego, California in October 2020. Updated information on the BMES annual meeting can be found at <https://www.bmes.org/annualmeeting>. NIBIB will not provide financial support for winning Student Teams or Honorable Mention awardees to attend the award ceremony. However, they are welcome and encouraged to attend the award ceremony or designate a representative to attend on their behalf.

NIBIB will award up to \$80,000 to the Challenge winner(s). VentureWell has indicated its intent to also award up to \$20,000 to the Challenge winner(s). If VentureWell fails to pay any portion of the monetary prize it has indicated it intends to pay, NIH/NIBIB does not have the legal authority to pay the amount on their behalf. For more information, please contact VentureWell.

**Award Approving Official:**

The NIBIB Award Approving Official will be Bruce J. Tromberg, Ph.D., Director of NIBIB.

**Payment of the Prize:**

Prizes awarded under this Challenge will be paid by electronic funds transfer and may be subject to Federal income taxes. HHS/NIH will comply with the Internal Revenue Service withholding and reporting requirements, where applicable.

Prizes offered by VentureWell will be paid directly by them.

NIH reserves the right, in its sole discretion, to (a) cancel, suspend, or modify the Challenge, or any part of it, for any reason, and/or (b) not award any prizes if no entries are deemed worthy.

**RULES**

**Eligibility Rules for Participating in the Challenge:**

(1) To be eligible to win a prize under this Challenge, an individual must be a member of a

“Student Team” as described below, and each individual of a “Student Team”:

- a) Must be an undergraduate student enrolled full-time in an undergraduate curriculum during at least one full semester (or quarter if the institution is on a quarter system) of the 2019-2020 academic year;
- b) Must form or join a “Student Team” with at least two other individuals for the purpose of developing an entry for submission to this Challenge. Each student on the Student Team must satisfy all the requirements for competing in this Challenge. While at least one Student on the Team must be from a biomedical engineering or bioengineering department (i.e., majoring in biomedical engineering or bioengineering), interdisciplinary teams including students from other fields are welcome and encouraged;
- c) Shall be a citizen or permanent resident of the United States. Non-U.S. citizen or non-U.S. permanent-resident students who are studying in the United States are eligible to be part of the competing Student Teams. However, they will not receive a monetary prize if they are part of a winning Student Team. See Prize section below for the distribution of prizes. As acknowledgement of their participation, however, the names of non-U.S. citizen or non-U.S. permanent-resident students who are part of winning Student Teams will be listed among the winning team members when results are announced and at the award ceremony;
- d) Must be a member of only one Student Team;
- e) Must be 13 years of age or older. Individuals who are younger than 18 must have their parent or legal guardian complete the Parental Consent Form found at <https://www.nibib.nih.gov/sites/default/files/Parental%20Consent%20Form.pdf>;
- f) Shall have agreed to be registered by the Team Captain (selected by the Student Team) to participate in the Challenge under the rules promulgated by the NIH as published in this announcement;

- g) Shall have complied with all the requirements set forth in this announcement;
  - h) May not be a Federal entity or federal employee acting within the scope of their employment;
  - i) May not be a Federal employee of the Department of Health and Human Services (HHS), or any other component of HHS, acting in their personal capacity;
  - j) Who is employed by a Federal agency or entity other than HHS (or any component of HHS), should consult with an agency Ethics Official to determine whether the federal ethics rules will limit or prohibit the acceptance of a prize under this (DEBUT) Challenge;
  - k) May not be a judge of the Challenge, or any other party involved with the design, production, execution, or distribution of the Challenge or the immediate family of such a party (i.e., spouse, parent, step-parent, child, or step-child); and
  - l) Must acknowledge understanding and acceptance of the DEBUT Challenge rules by signing the NIBIB DEBUT Challenge Certification Form found at [https://www.nibib.nih.gov/sites/default/files/NIBIB%20DEBUT%20Certification%20Form\\_0.pdf](https://www.nibib.nih.gov/sites/default/files/NIBIB%20DEBUT%20Certification%20Form_0.pdf) . Each entry must include one NIBIB DEBUT Challenge Certification Form, completed with: the printed names of Student Team members, an indication of whether the team member is either a US citizen or permanent resident, and signed and dated by each individual member of the Student Team. Entries that do not provide a complete Certification Form will be disqualified from the Challenge.
- (2) Each Student Team must appoint a “Team Captain” to carry out all correspondence regarding the Student Team’s entry. The Team Captain must be a citizen or permanent resident of the United States.
- (3) Each entry into this Challenge must have been conceived, designed, and implemented by the Student Team without any significant contribution from other individuals.
- (4) Federal grantees may not use Federal funds to develop their Challenge submissions or to

fund efforts in support of their Challenge submissions.

(5) Federal contractors may not use Federal funds from a contract to develop their Challenge submissions or to fund efforts in support of their Challenge submission.

(6) Submissions must not infringe upon any copyright or any other rights of any third party.

(7) By participating in this Challenge, each individual agrees to assume any and all risks and waive claims against the Federal government and its related entities, except in the case of willful misconduct, for any injury, death, damage, or loss of property, revenue, or profits, whether direct, indirect, or consequential, arising from participation in this Challenge, whether the injury, death, damage, or loss arises through negligence or otherwise.

(8) Based on the subject matter of the Challenge, the type of work that it will possibly require, as well as an analysis of the likelihood of any claims for death, bodily injury, property damage, or loss potentially resulting from Challenge participation, no individual participating in the Challenge is required to obtain liability insurance or demonstrate financial responsibility in order to participate in this Challenge.

(9) By participating in this Challenge, each individual agrees to indemnify the Federal government against third party claims for damages arising from or related to Challenge activities.

(10) An individual shall not be deemed ineligible because the individual used Federal facilities or consulted with Federal employees during the Challenge if the facilities and employees are made available to all individuals participating in the Challenge on an equitable basis.

(11) By participating in this Challenge, each individual grants to NIBIB an irrevocable, paid-up, royalty-free, nonexclusive worldwide license to post, link to, share, and display publicly the entry on the Web, newsletters or pamphlets, and other information products. It is the responsibility of the individuals on the Student Team to obtain any rights necessary to use, disclose, or reproduce any intellectual property owned by third parties and incorporated in the entry for all anticipated uses of the entry.

(12) Each individual agrees to follow all applicable federal, state, and local laws, regulations,

and policies.

(13) Each individual participating in this Challenge must comply with all terms and conditions of these rules, and participation in this Challenge constitutes each such participant's full and unconditional agreement to abide by these rules. Winning is contingent upon fulfilling all requirements herein.

## **JUDGING CRITERIA**

### **Basis Upon Which a Winner Will be Selected.**

Entries will be judged by a panel of NIH staff. This panel may take into consideration the preliminary technical assessment provided by external experts in the field. The final winner selections will be approved by the Director of NIBIB.

The winning entries will be selected based on the following criteria:

- Significance of the problem addressed— Does the entry address an important problem or a critical barrier to progress in clinical care or research?
- Impact on potential users and clinical care—How likely is it that the entry will exert a sustained, powerful influence on the problem and medical field addressed?
- Innovative design (creativity and originality of concept)—Does the entry utilize novel theoretical concepts, approaches or methodologies, or instrumentation?
- Working prototype that implements the design concept and produces targeted results— Has evidence been provided (in the form of results, graphs, photographs, films, etc.) that a working prototype has been achieved?

## **HOW TO ENTER**



## **Registration Process and Submission Requirements:**

1. Each Student Team may submit only one entry into this Challenge through the Team Captain. The Team Captain will register at <https://venturewell.org/debut/> and follow the links and instructions to certify that the entry meets all the Challenge rules and submit the Student Team's entry on behalf of the Student Team. At this time, teams will have the option to indicate that they wish to have their entries considered also for prizes sponsored by VentureWell. For a description of these prizes and rules of participation, see <http://venturewell.org/students/debut/guidelines>.
2. Each entry must comply with Section 508 standards that require federal agencies' electronic and information technology be accessible to people with disabilities, <http://www.section508.gov/>.
3. Each entry must be submitted as a single pdf file including the following 4 components:
  - i. The NIBIB DEBUT Challenge Certification Form (downloadable from <https://www.nibib.nih.gov/sites/default/files/NIBIB%20DEBUT%20Certification%20Form%202015.pdf> completed with project title and team member information, printed names, indication of U.S. citizenship or permanent residency, dates, and signatures of each individual member of the Student Team.
  - ii. Project Narrative (not to exceed 6 pages using Arial font and a font size of at least 11 points) that includes the following 6 sections:
    - 1) Abstract
    - 2) Description of clinical need or problem, including background and current methods available. When the submitted entry is part of a bigger/ongoing project, the specific components designed and implemented by the competing Student Team must be clarified and distinguished from those accomplished by others (e.g. other students, advisor, collaborators). Teams wishing to be considered for the HIV/AIDS Prize should indicate this in this section and discuss how their project advances or develops

technology for HIV/AIDS prevention and/or care. Teams that wish to be considered for the HIV/AIDS prize are encouraged to visit <https://www.oar.nih.gov/> and study the OAR research areas and priorities. Teams wishing to be considered for the Healthcare Technologies for Low-Resource Settings Prize should indicate so in this section and discuss how their technology advances healthcare for underrepresented populations or meets healthcare needs in low resource settings. Teams developing technologies for underrepresented populations or low-resource settings are encouraged to visit [www.nimhd.nih.gov](http://www.nimhd.nih.gov) and study the NIMHD Minority Health and Health Disparities Research Framework (<https://www.nimhd.nih.gov/about/overview/research-framework/nimhd-framework.html>) to explore factors contributing to health disparities.

- 3) Project objective statement, describing the approach to address the problem, including a discussion of the innovative aspects
- 4) Documentation of the design, providing sufficient detail
- 5) Documentation of the prototype of the final design, with photographs, graphical representations, or link to a video, as appropriate.
- 6) Proof that the design is functional and will solve the problem, providing a discussion of how the efficacy of the device was evaluated, including test results, graphics obtained with the designed solution and comparison to existing device outputs. A link to a 3-min video demonstrating the successful operation of the device developed is required. This link may be provided in this section and will be requested separately during the online submission process.

The 6-page limit includes any graphics, but excludes the certification form, parental consent form, and any references. Submissions exceeding 6 pages for the Project Narrative will not be accepted.

Optional supporting material: The following optional supporting material may be submitted as a separate pdf file and will not count towards the 6-page limit: up to three

support letters from stakeholders (patients, healthcare providers, industry, etc.); up to three supporting articles, reports, etc that present background information for your project; and up to 3 links to videos and/or websites. However, the judges will mainly review the required components of your application and may consider the optional material at their discretion.

- iii. Sponsor letter, on department letterhead, from a faculty member from the Biomedical Engineering, Bioengineering or similar department of the institution in which the Student Team members are enrolled, verifying a) that the entry was achieved by the named Student Team, b) that each member of the team was enrolled full-time in an undergraduate curriculum during at least one semester or quarter of the academic year 2019-2020 and c) describing clearly any contribution from the advisor or any other individual outside the Student Team (especially when the submitted entry is part of a bigger/ongoing project, the specific components designed and implemented by the competing Student Team must be clarified and distinguished from those accomplished by others).
- iv. A completed Parental Consent Form, downloadable from <https://www.nibib.nih.gov/sites/default/files/Parental%20Consent%20Form.pdf>, for each individual on the Student Team who is under the age of 18.

### **ADDITIONAL INFORMATION**

**Supplementary Information:** For more information and to submit entries, visit <http://www.nibib.nih.gov/training-careers/undergraduate-graduate/design-biomedical-undergraduate-teams-debut-challenge/> or <http://venturewell.org/students/debut>.

**For Further Information Contact:** *info@nibib.nih.gov* or (301) 451-4792.

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Date

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*Bruce J. Tromberg, Ph.D.*

*Director, NIBIB]*