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Members of iGEM Headquarters at the 2019 Giant Jamboree

Welcome

Welcome to the 2020 iGEM Competition! We are so glad that you are joining us this year. This is not a normal year. We are living through the biggest pandemic in the past 100 years. Now more than ever, the world is realizing the important role science has in our society. We believe that synthetic biology will help solve the world's biggest problems, and we know that iGEMers can do incredible things when they work together.

From listening to your feedback, we know that many teams are still hopeful and have a passion to compete. If you can continue this year, we will help you! In this PDF you'll find a brief overview of what to expect during the Competition this year. You'll also find introductions to our Committees and Ambassadors, and a guide to the resources they have prepared for you.

This is not a normal year, but what you do next will determine the future. Together, we can make this an exceptional iGEM year. We can't wait to see what you come up with!

Website Overview

To help you succeed in the iGEM Competition, we have grouped information into Hubs. Visit each hub for a deeper understanding of what is expected from your team for the 2020 season.



Team Hub

2020.igem.org/Teams

Find different ways to interact with the rest of the iGEM teams on this page, as well as general team information for the 2020 season.



Competition Hub

2020.igem.org/Competition

Competition requirements, deliverables, rules, and other important information for the competition. All team members should read through these pages prior to starting work on their iGEM project.



Judging Hub

2020.igem.org/Judging

Learn more about Judging, including Judging forms, evaluation rubric, and medal and awards criteria. Resources for both teams and judges.



Safety Hub

2020.igem.org/Safety

Learn about Safety and Security in the iGEM Competition, and the obligations that all teams must fulfill to participate successfully and safely.



Human Practices Hub

2020.igem.org/Human Practices

Learn about Human Practices. Check out our guidance for teams and resources to help you integrate human practices in your project design.



Measurement Hub

2020.igem.org/Measurement

Learn about Measurement in the competition. Check out our guidance for taking successful measurements in synthetic biology and resources to help you get started.



Resources Hub

2020.igem.org/Resources

A wealth of information to help you during your iGEM experience. Visit this page for tips for starting a team, advice on how to fundraise, wiki editing help, and much, much more!



2020.igem.org/Giant Jamboree

The iGEM 2020 Giant Jamboree is going virtual! Find out about registration, scheduling, and event-specific details.



2020.igem.org/Calendar

Check out the Calendar to see all of the Competition deadlines and freezes.

Deliverables

Every iGEM team is responsible for completing the deliverables listed below. These items are used to evaluate your team, in addition to the other medal and award criteria. Failure to complete these deliverables may impact your team's chances at winning medals and prizes during the Giant Jamboree.

For more details about the 2020 Deliverables, please visit 2020.igem.org/Competition/Deliverables

Please refer to the 2020 Calendar for details on all deadlines mentioned below.



1. Team Wiki

Due Date: October 19, 11:59PM EDT

Teams need to document their project on their Wiki page. This page is the public face of your project. Since it is hosted on the iGEM servers, no content will ever get lost and you will still be able to share the website after the competition.



2. Poster

Due Date: TBD

Each team is given one poster slot. Students must present the poster during the scheduled Poster Sessions at the Giant Jamboree.



3. Team Presentation Video

Due Date: TBD

In lieu of a live presentation, teams will submit 20-minute presentation videos ahead of the Jamboree. Videos can be viewed at any time during the Jamboree event.



4. Project Promotion Video

Due Date: TBD

New in 2020, all teams must create and submit a Project Promotion Video.



5. Judging Form

Due Date: October 14, 11:59PM EDT

Since iGEM is a competition, teams will be judged on their projects during the Giant Jamboree. Teams fill out their own Judging Form. The Judging Form will be sent to the judges so they can evaluate your team for prizes and awards.



6. Project Attributions

Due Date: October 19, 11:59PM EDT

All of the work done in your project must be attributed correctly on your team's Attributions page. You must clearly state the work that was done by the students on your team and note any work that was done by people outside of your team.



7. Safety Form

Preliminary - June 26, 11:59PM EDT Final - September 11, 11:59PM EDT

All teams are expected to follow a high standard of safe and responsible biological engineering. Teams must submit various safety forms over the course of the competition.



8. Registry Part pages

Due Date: October 19, 11:59PM EDT

Teams must create and document Part pages on the Registry for the Parts they make. While your Team Wiki exists to document your entire project, the Registry Part Page(s) exists to specifically document your new part(s). These pages should be very detailed.



9. Project Inspiration and Description

Due Date: October 19, 11:59PM EDT

Teams are asked to document how and why you chose your iGEM project, and in a few sentences describe how you will achieve your goal(s) on your team wiki.

What's New for 2020?

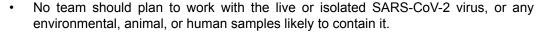
If you have participated in the iGEM Competition before, you'll know that there are a lot of things to keep track of. Based on feedback from teams, we are adapting the iGEM experience - we have examined each part of the competition to make it even better this year.

See below for some of the key changes, or visit the "New for 2020" hub for the full list of changes: 2020.iqem.org/Competition/New

Safety and Human Practices, and COVID-19

As we face a global challenge and learn to work together in new ways considering how "your work affects the world and the world affects your work" through your Human Practice efforts is more important than ever. Some teams may want to respond to the COVID-19 pandemic using the tools of synthetic biology. Regardless of your project choice, all teams must follow these new Safety Policies:







- Any activities connected to diagnostics, therapeutics or vaccines for COVID-19, as well as the planned use of any fragments of the SARS-CoV-2 virus, are NOT covered by iGEM's White List and you MUST submit a Check-n form to get permission for this work in advance.
- Teams must follow ALL guidance from their governments and local health care experts about in-person interactions, whether between team members or with others in the community.

See the full announcement: 2020.igem.org/Safety/Coronavirus

Changes to Judging



Given the impact that the global pandemic is having on teams, judging criteria will be updated to be appropriate for this year. The efforts of 2020 teams will be fairly evaluated, awarded, and celebrated!

You can fully participate in iGEM 2020 even if you have limited or no access to your lab this season and we are excited to announce that this year lab work will not be required to achieve a medal this year.



Medals will celebrate and reflect the same level of project quality as in previous years, but the ways that teams can achieve those medals will be much more flexible and open this year. With these changes to criteria, we also want to provide teams with guidance, ideas, and suggestions for how to think about and approach each criteria. Working with our committees, we will continue to update this guidance as the season progresses based on feedback and/or questions we receive from teams.

New special prizes will be added to acknowledge and reward the effort teams are putting into their projects.

Details about the Medal Criteria are now available! 2020.igem.org/Judging/Medals

New iGEM Activities Starting Now

We are launching new communication initiatives and activities so that iGEM teams stay well connected and have fun. Learn more at: 2020.igem.org/Teams/Events





Virtual Giant Jamboree

The COVID-19 pandemic is an unprecedented challenge for iGEM this year. Global travel and large meetings are a major risk factor for spreading the virus. To prioritize the health and safety of our community, we will host the Giant Jamboree virtually this year.



Team Presentation Videos

In lieu of a live presentation, teams will submit 20-minute presentation videos ahead of the Jamboree. Videos can be viewed at any time during the Jamboree event.



Live Poster Sessions

Poster sessions will be Q&A time for teams to interact directly with your judges! Present your poster to your judges and peers during your team's live poster session.



Workshops

Attend workshops to build your skills, learn more about synthetic biology, and connect with iGEM's Committees and Partners in a small-group setting.



Opening and Awards Ceremonies

Get together with your neighboring teams for a watch party of the exciting opening and closing ceremony live streams!



Social Events and Networking

Join some unique social and networking events to meet your peers from around the world.



And more!

More information will be available soon. Stay tuned.

FREE DNA 20,000 BASE PAIRS

HOW TO GET YOUR 20 KB OF FREE DNA

STEP 1: CONFIRM REGISTRATION WITH IGEM.

STEP 2: REGISTER WITH IDT AT WWW.IDTDNA.COM/iGEM.

After your registrations with iGEM and IDT are confirmed, your team will receive up to 20,000 base pairs of gBlocks Gene Fragments or the IDT product equivalent in your local currency*. IDT products favored by iGEM participants include:

- Genes and gBlocks Gene Fragments
- oPools Oligo Pools
- Alt-R CRISPR genome editing

See full details and important updates at WWW.IDTDNA.COM/iGEM.

This promotion is available only to participants in the iGEM competition who have registered with IDT. This promo code is valid for multiple uses with the total value not to exceed \$3000 (USD) or currency equivalent. Promo codes cannot be used towards the purchase of an Oligo-Card® payment card. Valid for direct sales only. Offer excludes any heavy stock items. Standard shipping and taxation charges may apply to discounted and free promotional items. Offer valid for qualifying purchases received no later than October 13, 2020. Cannot be combined with other discounts, promotions or special offers. Offer void where prohibited, licensed or restricted by federal, state, provincial or local laws or regulation or agency/institutional policy. Other restrictions may apply.

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^{*} Restrictions may apply in some countries





There are over 12 hazards in this image, have you spotted them all?

iGEM's Lab Safety and Security Rules

- 1. Teams must be in full compliance with iGEM's safety and security policies.
- Teams must use the Safety Form to provide information on any risks from their project and steps taken to manage them.
- 3. The Safety and Security Committee must approve (a) Check-In Forms before a team uses parts and organisms not on the White List, and (b) animal use forms before teams use vertebrates and some invertebrates.
- 4. The Instructor or Primary Contact must sign off Safety and Security Forms and animal use request forms.
- 5. All deadlines for providing safety and security information must be met.
- 6. Teams must follow all relevant international, regional, national, local, or institutional laws, rules, regulations or policies, including national or institutional biosafety and biosecurity rules. If conducting any experiment with human subjects (including non-invasive experiments, such as surveys), teams must comply with all rules governing experiments with human subjects.
- 7. Teams must work in the biosafety level appropriate for their project. If your project involves organisms and parts that can be used safely in a BSL1 lab, you should not work at higher containment levels. If this is not possible, an explanation must be provided in the Safety Form.
- Teams cannot conduct work with Risk Group 3 or 4 organisms, parts from a Risk Group 4 organism, or work in a Safety Level 3 or 4 laboratory.
- 9. If teams submit samples, they must follow iGEM shipment requirements when doing so.
- 10. Teams cannot release or deploy their project outside of the laboratory (including putting them in people) at any time during the competition or at the Giant Jamboree.



Failure to meet any of these requirements can lead to immediate disqualification from the competition and referral to the Responsible Conduct Committee.



safety@igem.org





Executive Judging Committee at the 2019 Giant Jamboree.

Executive Judging Committee

The iGEM Executive Judging Committee updates, maintains, and manages the judging program within the iGEM Competition. Our roles and responsibilities include:

- Setting medal and award criteria
- Evaluating and refining rubric language
- Recruiting and evaluating judge applicants
- Educating and training judges in preparation for the Giant Jamboree
- Writing and revising content, including the judging handbook, for both judges and teams.

The members of the EJC work very closely with iGEM HQ throughout the year and coordinate their efforts primarily through the Director of the Competition (Traci Haddock-Angelli), Director of the Registry (Vinoo Selvarajah), and the Director of Judging (Peter Carr). As with all iGEM Committees, the decisions made by the EJC are subject to final approval by the President of iGEM (Randy Rettberg).

The EJC works on the iGEM judging program throughout the year. The judging criteria and awards are shaped with support from the other iGEM committees - Human Practices, Measurement, Safety and Security, Diversity, Video & Remote Technology, and Software. This work involves three major stages:

- 1) Preparing the judging program for the Jamboree
- 2) Running the judging program at the Jamboree
- 3) Evaluating the judging program after the Jamboree

Resources

For more information on Judging, you can visit:

- 2020.igem.org/Judging
- 2020.igem.org/Judging/Medals
- 2020.igem.org/Judging/Rubric
- 2020.igem.org/Judging/Judging_Form



judging@igem.org



(III) 2020.igem.org/Judging



Members of the Responsible Conduct Committee

Responsible Conduct Committee

iGEM is a challenging, fun, and rewarding experience for young scientists and engineers to explore and contribute to the field of synthetic biology.

Our job is to support fairness and to recognize honesty, integrity, mutual respect as well as engineering excellence. We are the point of contact for anyone who has concerns about behavior and practices of any iGEM participant (teams, judges, etc.) that is not aligned with these core values of iGEM. We value confidentiality and take great care to ensure that issues are resolved in the most fair way possible while protecting the well being of iGEMers. We are here to ensure the jamboree is an exciting event for the celebration of commitment and accomplishment of all iGEMers.



For more information on the Responsible Conduct Committee visit:

- Rules of Conduct 2020.igem.org/Competition/Rules_of_Conduct
- Preventing Harm 2020.igem.org/Competition/Rules of Conduct/Preventing Harm
- Responsible Conduct Committee 2020.igem.org/Competition/Rules_of_Conduct/Responsible_ Conduct



cc@igem.org



"Human Practices" are plural for a reason! Your team's work could take many shapes, like investigating the ethics of your project, engaging with communities impacted by it, or finding ways to show that your technology meets a real need.

Human Practices Committee

Using synthetic biology to address real-world problems requires thoughtful engagement with the world. This is what we call Human Practices. Creating feedback loops between your design and the world in which it exists involves Reflection, Responsibility and Responsiveness. What do we mean by these?

Reflection invites you to carefully think through your inspirations and your goals. What values—environmental, social, moral, scientific, or other—inspired your project? Did you reach your initial goals or did you have to adjust them? Remember to reflect throughout your project and not just at the start or the end!

Responsibility is about doing your work in a way that reflects iGEM values like respect, honesty, fairness, accountability, community, safety and security. It is also about knowing the limits of your powers and realizing where, when, and how others' knowledge or values should be considered. Which communities will be most interested in or most affected by your project? Which communities will be left out or negatively impacted if your project succeeds?

Responsiveness is about creating and seizing opportunities to learn about the world outside the lab and using that knowledge to re-imagine your innovations to do good. It is the ongoing process of iteration and interaction to continuously improve your approach. How can you use your Human Practices work to inform your team's ethical, technical, safety and/or communication decisions?

Ultimately, putting these principles into practice will increase the chance your project will address a real-world problem and minimize the chance it will create harms and injustices.

Resources

To learn more about Human Practices, check out the HP hub! There you will find:

- Resources for COVID-19 guidance for Human Practices
- An introductory video
- How to succeed: Human Practices medal and prize criteria
- Frequently Asked Questions
- Resources on informed consent, survey design, and responsible research
- and more!





Now more than ever, it is important for all iGEM members to recognize the importance of building an open and welcoming scientific community. Take action with the D&I committee to create a more diverse and inclusive iGEM.

Diversity and Inclusion Committee

Ask yourselves: "Which communities do we represent? Who benefits from our research? Whose voices and opinions are we including or excluding?" These questions are challenging. Answering them requires critical reflection on privilege and power dynamics. But only by confronting them can we create equitable advances. As future scientific leaders, you must take these responsibilities into your hands. We want fresh ideas and thoughtful implementation. And we're here to help.

Inclusive Research Methods

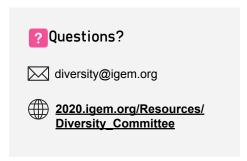
Synthetic biology solutions have the power to transform society. It is important to engage diverse stakeholders at every stage - from conception to execution. Make your research fully representative. Project design can unintentionally carry bias. Do your ideas and methods include people with diverse identities such as gender, ethnicity, and socioeconomic status? Do your surveys and communication materials use appropriate and inclusive language? Engage the broader community. With whom will you share your knowledge? How will you make your work accessible to individuals who are differently able, speak different languages, or have different understandings of science?

Inclusive Team Culture

Inclusive research begins with inclusive teams. Let your diverse backgrounds and experiences be an asset! Regularly assess individual goals to make sure voices are being equally heard. Is everyone gaining new skills? Are responsibilities fairly divided? Team leaders and PIs should assess individual needs and make accommodations where feasible. Changes like flexible work hours or accessible workspace setups can enable team members to contribute to their fullest potential. Remember to acknowledge everyone's contributions and accomplishments. Creating a supportive environment will make your experience truly successful.

Resources

Looking for inspiration on how previous iGEM teams have addressed diversity and inclusion in their projects? Visit 2020.igem.org/Resources/Diversity/Excellence for some examples. More recommendations and resources can also be found on our website. Please reach out to our committee for any guidance on making your iGEM project or team experience more inclusive.





Members of the Measurement Committee at the 2019 Giant Jamboree

Measurement Committee

Good engineering practices and experimental design can help your team's iGEM project succeed, and good measurement is essential to ensure that iGEM teams' work is reproducible and useful to the wider community. Important issues to plan for and consider include:

- How to use models to help guide your designs and evaluate your experiments.
- How to select components for your project design, taking into consideration standards and measurement.
- How to effectively build your designs and check if construction was successful.
- How to select appropriate equipment, assays, and process controls and standards.
- · How to reproducibly manage, analyze, and report data and metadata.
- How to visually present your results clearly and unambiguously.

The iGEM Measurement Committee is organized to help teams with all of these challenges by providing information and resources, including community protocols and webinars. Measurement committee members can also provide additional guidance during 'office hours' and in addition have agreed to be contacted by teams seeking assistance on specific measurement-related aspects of their projects.

Resources

The <u>iGEM Measurement Hub</u> has a number of sections to help you with your project:

- What is Measurement? Learn about Measurement and why it is an important part of iGEM.
- How to Succeed: Careful measurement practices are a hallmark of successful iGEM projects. Check out our tips for taking successful measurements in synthetic biology!
- Measurement Protocols: Unit calibration protocols for you to use, plus a data validation offer and information on how to share protocols using protocols.io.
- Measurement Resources: Resources to help you think about how to integrate good measurements in your project design.





The ambassadors are a passionate group of alumni that come from all over the world and are committed to helping you be a part of the iGEM community. They want to help make your iGEM experience a success!

After iGEM Ambassadors

You may have already met your regional ambassador on a coffee chat earlier in the season. If you did you are one of 1000 iGEMers worldwide who shared their challenges, ideas, inspirations and progress during the time of COVID-19. It was based on this feedback that we were able to adapt the iGEM Competition for 2020.

But our job does not end here, we will continue to host regular coffee chats to celebrate your successes, hear your concerns and suggest resources. We will be working with other iGEM Committees to bring you workshops on important topics, such as safety and security and human practices.

We want to help you connect with other teams in your region, and provide support for virtual meetups. We also want to make sure you are having fun! Be on the lookout for movie nights and trivia games. If you have an event that you want to see happen or a suggestion, please do not hesitate to get in touch with us.

The Ambassadors believe that synthetic biology is one of the most exciting fields in the world that has a tremendous amount of potential to do good, and we believe that iGEMers are the ones to actualize this potential. Therefore, Ambassadors also focus on engaging iGEM alumni and help promote synthetic biology in their region. We hope that your involvement with iGEM and the ambassadors continue long after the competition, and that the lessons you learn this season will help guide you throughout the rest of your career.



Check here to learn more about ambassadors and their projects 2020.igem.org/Ambassadors

Check here for to see call schedules with ambassadors in your region: 2020.igem.org/Ambassador Calls

Check here for information about meetups, fun events and workshops from the ambassadors: 2020.igem.org/Teams/Events

To get a sense of what is in store for you after iGEM, check out: igem.org/After iGEM









Combined screenshot of participants in the Ambassador Team Call Campaign (March 23-31). More than 1000 iGEMers from 200 teams met online to talk about challenges they are facing, and share ideas on how to cope with a new normal.

Video & Remote Technology Committee

We are adapting iGEM to the new normal! As you are seeing all around the globe, remote participation is becoming a large part of our daily lives. In times of necessary social distancing, iGEM teams everywhere are still meeting online and finding ways to continue their work. By transitioning to a new video and virtual-style of competition, we have an opportunity to improve and advance to a new kind of iGEM experience!

Many of you already impress us with your team videos every year. This year, all iGEM teams have a chance to excel in a new area: project video-making. New video-style presentations and project promotions will pave the way for faster and easier access to team presentations, more outreach potential, and more inclusive and accessible source of information.

The VRT Committee will support you along the way! We have a collection of past examples, video guidelines, resources, equipment and software you can use. We are also excited to help in organizing virtual events - and encourage you in (remotely) meeting with other teams!

Our new committee supports your team with resources in these two areas:



Video Deliverables

- 1. Project Promotion Video
- 2. Team Presentation Video



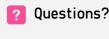
Virtual Events

- 1. New activities and meetups
- 2. Virtual Giant Jamboree

Resources

On our page 2020.igem.org/Video Tech Committee you will find:

- An introductory video
- Exemplary videos from previous years
- · Guidelines on video deliverables
- Resources for video filming and editing
- Tips on science communication
- Tech Support
- · Platforms and virtual event tips
- The VRT Committee members and how to reach out to them





video@igem.org



2020.igem.org/ Video_Tech_ Committee HEADQUARTERED IN BOSTON, MA, GINKGO USES THE MOST ADVANCED TECHNOLOGY ON THE PLANET—**BIOLOGY**—TO HELP COMPANIES GROW BETTER PRODUCTS.

Ginkgo's cell programming platform is enabling the growth of biotechnology across diverse markets, from food to fragrance to pharmaceuticals. Right now, there is nothing more critical than scaling diagnostics and developing new therapeutics and vaccines. We've committed our platform to supporting research and development efforts for COVID-19, including \$25M of free access to our infrastructure.



GINKGO BIOWORKS



SCIENCE DOESN'T STOP

KEEP WRITING THE FUTURE.

TWISTBIOSCIENCE, COM

Dear iGEM colleagues and friends,

2020 has been a challenging year, with many experiencing personal and professional losses from the COVID-19 pandemic.

Schools have closed and transitioned to online classes and most labs are not active or working at normal capacity. There has been a direct impact to the iGEM program and the lives of most of us around the world.

In the face of so much uncertainty and chaos, I want to let you know at Twist we believe Science Doesn't Stop and neither should you.

At times like this we look to science to solve the issues we face. The challenge has already been taken up by scientists, doctors, engineers, and others using synthetic biology to address the current pandemic.

The iGEM community plays an integral role in providing solutions to global health and development needs. Whether alumni or first-time competitor, iGEM participants represent the promise of and hope of the next generation of scientists.

Twist is proud to support you on your journey and we want to let you know we're here to help.

Sincerely,

Emily Leproust CEO Twist Bioscience

Sponsors

As a non-profit organization, we count on the support of our partners and sponsors to help us continue to provide this unique and valuable experience to students worldwide. Thank you to all of everyone below who have helped make iGEM possible.

Platinum Partner









Partner Plus



Partner







Gold





Partner Special Offers

We are proud to announce our Partner Sponsors Special Offers and Team Grant opportunities for iGEM 2020. Check back often for the latest funding opportunities, offers and discounts!



IDT

FREE DNA synthesis

20 kb of complimentary DNA synthesis is available to all registered teams!



GenScript

Team Grant Opportunity

Awarding \$3000 in products and financial support for up to 6 teams, and 20% off DNA synthesis and cloning for all teams.



Benchling

FREE software and extras

iGEM teams can unlock: Notebook, Molecular Biology, 10 GB of extra space, and Benchling Sync - all for free.



Revive & Restore

Team Grant Opportunity

Awarding up to 12 grants of \$5500 to teams with projects focused on conservation.

Proposals are due by May 25.



SnapGene | Geneious

FREE Software for teams

Free SnapGene and Geneious licenses for iGEM 2020 teams.

For details visit: 2020.igem.org/Sponsors/Special_Offers

