Oracle for Research Fellows Application Form
(Example)

Oracle for Research collaborates with researchers and university entrepreneurs to find solutions to humankind's complex, disruptive, and high-impact social, environmental, economic, and technical challenges, bringing about positive, transformational change in the world. Through the Oracle for Research *Fellows* program, Oracle provides cash awards and Oracle Cloud credits to accelerate research and discovery.

- Oracle does not mine or monetize your research data. Learn more here.
- Oracle for Research accepts project proposals based on criteria that include the potential impact of the project, the extent to which Oracle Cloud and Cash award will likely have a positive effect on the project success, willingness to participate in PR, Marketing and outreach activities and experience of the PI.
- Researchers must apply for and have their projects accepted by Oracle for Research to receive cash awards and Oracle Cloud credits.
- Information collected in this application is confidential and is used only in conjunction with the Oracle for Research program. We will not share or use your information for marketing or other public purposes without your express permission.
- Oracle Cloud credits awarded may be used for Oracle Cloud Infrastructure as a Service (IaaS) and Platform as a Service (PaaS) products, based on general availability at the time the Oracle Cloud credits are used.
- Awarded Oracle Cloud credit amounts will vary depending on the proposal and usage requirements documented in the application form.
- Additional signatures or acceptance of Oracle's Cloud Service Agreements will be required prior to Cloud credit activation.
- Oracle for Research program availability is subject to regional restrictions.
- Oracle for Research reserves the right to refuse applications that do not align to Oracle's values.

Application Form:

1. **Please provide your information:**

First name: Henry
Last name: Wu
Job title: Associate Professor
Institution: John Hammond Institute of Evolutionary Biology, Cloud State University
Institutional email address: hwu93@csu.edu
Institution street address: 2300 Oracle Way
Institution city: Austin
Institution state/province: TX
Institution country: USA
Institution mail/zip code: 78741
Institute tax ID (optional):

Phone number: 123-456-7890

2. **Who is the lead researcher conducting the work on this project?**
   a. ☐ Me   X Someone Else
   b. If someone else, please provide:

Name: Ellie Sattler, PhD
Job title: Postdoctoral Research
Institution: Cloud State University
Institutional email address: esa21@csu.edu
Phone number (optional):
Time held in current job title at institute: 2 years

3. **Do you have any academic or institution partners or collaborators on this project?**
   a. X Yes   ☐ No
   b. If yes, provide names and job titles:

Dr. Ian Malcom, Assistant Professor, Cloud State University
Dr. Alan Grant, Associate Professor, Cloud State University

4. **Do you have an existing Oracle account?**
   a. ☐ Yes   X No
   b. If yes, please provide:

Cloud account email address:
CSI number:
Cloud account name (optional):

5. **Do you have any existing contacts within Oracle?**
   a. ☒ Yes   ☐ No
   b. If yes, provide names and job titles:

Marcy Collinson, Sr. Principal Global Strategic Partnerships PM, Oracle for Research

6. **Who will act as your primary technical contact (e.g. who will own and administer the Oracle Cloud tenancy)?**
   a. ☒ Me   ☐ Someone Else
   b. If someone else, provide:

Name:
Job title:

Institutional email address:

7. Is your institution aware and supportive of your application to the Oracle for Research Fellows Program?

☒ Yes ☐ No

8. Have all approvals required by your institution to submit this application been obtained?

☒ Yes ☐ No

9. Who is the Legal Signature Authority who will receive the quote and agree to the contract terms on behalf of the academic institution?

a. ☐ Me ☐ Someone Else

b. If someone else, provide:

Name: Owen Grady
Institutional email address: owg52@csu.edu

Project Details:

10. Provide details of your project:

Research project name: **An open source, predictive platform for the functional phenotypes of rare genetic mutations.**
Project expected start date: June 1, 2022
Proposed project duration (up to 12 months): May 30, 2023
Project executive summary (3-4 sentence overview of your project): Rare genetic mutations in the nervous system can have debilitating and devastating effects on patients that severely diminish quality of life. Due to the rarity, minimal funding, or lack of data, patients with rare genetic mutations and their families are often left without answers or without effective treatment options. In this proposal, we aim to develop a novel ML platform that uses molecular dynamic simulations to predict the phenotypic consequences of rare genetic mutations of the nervous system. The platform will be made open source so patients or doctors can input genetic mutation information and receive preliminary estimations on phenotypic consequences.
Research public relevance, project description and goals: Note to Reader: While there are no set criteria for this section, winning applicants' responses were approximately 2,000 words in length. Winning applicants successfully introduced their research project with background that was interpretable by a diverse review committee. They also supplemented their project description with relevant citations and figures.

11. Please summarize any prior work in this research area and state how this project will build upon and/or differentiate itself from existing work:

Include work by others, related research publications or commercial efforts:
Note to Reader: While there are no set criteria for this section, winning applicants' responses were approximately 1200 words in length. Winning applicants successfully demonstrated their team member's experience in this field, and they highlighted previous publications that preceded their proposed project. Winning answers included relevant citations and figures from previous research in their lab. They also clearly stated how their project is novel and differentiates from existing work in the field.

12. Provide expected milestones (milestones should outline expected progress at regular intervals throughout the project):

Milestone #1 summary: Acclimate to and set up Oracle Cloud environment and upload all necessary data.
Estimated completion date: Aug 1, 2022
Description: Note to reader: Winning applicants provided milestone descriptions that are approximately 150 words in length. Descriptions detailed the work and methodologies to be done over the months that comprise this milestone.

Milestone #2 summary: Develop ML algorithm and molecular dynamic simulation pipeline for the prediction of the phenotypes of known *SCN8A* mutations.
Estimated completion date: Dec 1, 2022
Description: Note to reader: Winning applicants provided milestone descriptions that are approximately 150 words in length. Descriptions detailed the work and methodologies to be done over the months that comprise this milestone.

Milestone #3 summary: Develop the secondary drug screening pipeline using the ZINC Database.
Estimated completion date: March 1, 2023
Description: Note to reader: Winning applicants provided milestone descriptions that are approximately 150 words in length. Descriptions detailed the work and methodologies to be done over the months that comprise this milestone.

Milestone #4 summary: Migrate our ML algorithm and drug screening pipeline to a publicly facing webserver while creating a gateway to Oracle Open Data to store and share results. Begin expanding our work beyond *SCN8A* mutations.
Estimated completion date: June 1, 2023

Description:

<mark>Note to reader: Winning applicants provided milestone descriptions that are approximately 150 words in length. Descriptions detailed the work and methodologies to be done over the months that comprise this milestone.</mark>

13. How will a research fellow cash award from Oracle improve your research?

Please be as descriptive as possible, including how you intend to use the funds to advance or accelerate your research:

The cash award will be used to support two graduate student assistant (GRA) positions for one year (Milestones 1-3), one part-time undergraduate student (Milestone 4), tuition, 0.25 month faculty summer salary, and travel/conference/publication costs.

Faculty summer salary (0.25 month)	$2,000
2x GRA salary (12 month)	$60,000
UGRA salary (6 month part-time)	$8,000
Fringe (30.90%)	$12,000
Tuition (12 month)	$18,000
Total	**$100,000**

14. **How will a research fellow Cloud Credit award from Oracle improve, advance or accelerate your research?**

Please be as descriptive as possible:

Based on our experience with other cloud vendors, as well as based on the availability of our own local GPU- compute resources, we anticipate requiring approximately $89,741 in Cloud Credits to complete the project ($7,478 per month). The cost breakdown is shown in the table below based on the Oracle Cloud Cost Estimator (https://www.oracle.com/cloud/costestimator.html). The Cloud Credits will be used to run our ML experiments at scale on on-demand GPU-compute hardware. We will also use OCI and Cloud Credits to host the webpage and server-side backend for the predictive platform. As the project is highly computational, OCI Cloud Credits are paramount to the successful completion of the project.

Part	Description	Usage	Unit Price	Monthly Cost
B88512	Compute GPU	2000	$3.05	$6,100
B92911	Oracle APEX App Dev	744	$.3226	$240.01
B90455	Oracle APEX Database	1	$118.40	$118.40
B91627	Storage (requests/month)	20	$.0034	$.068
B91628	Storage (GB/month)	40000	$.0255	$1,020
Monthly Total (USD)				**$7,478.48**

15. Will this project result in the creation of a publicly available database or research tool?

☒ Yes   ☐ No

> **If yes, please include how this tool or database will affect or benefit your field:**
> Yes, the analysis platform and the associated data that will be generated will be made publicly available for use by researchers, doctors, and families of patients. The analysis platform website will be hosted on Oracle Cloud and the generated data will be uploaded to an Oracle Open Data repository. Users of this repository will also have the option to upload relevant, de-identified clinical data associated with their mutation of interest.

16. Will you or someone on your team be willing to share knowledge developed through this project with other researchers interested in Oracle Cloud or part of the Oracle for Research program?

☒ Yes   ☐ No

17. What is the primary field of research for this project?

Select one:

☐ Advanced Engineering (e.g.: aerospace, automotive, civil, manufacturing)
☐ Agricultural Sciences
☒ Artificial Intelligence and Machine Learning
☐ Business (e.g: supply chain)
☐ Cognitive and Behavioural Sciences
☐ Computer Science
☐ Environmental and Earth Sciences (e.g.: climate studies, ecology, geology, meteorology)
☐ Energy (e.g.: oil and gas, alternative fuels, utilities)
☐ Law
☒ Life Sciences (e.g.: healthcare, medical and pharmaceutical)
☐ Physical Sciences (e.g.: physics, chemistry, astronomy, astrophysics)
☐ Social Sciences (e.g.: anthropology, economics, jurisprudence, political science, sociology)
☐ Other (please specify):

Cloud Infrastructure:

18. Anticipated computing infrastructure requirements:

Select at least one:

☐ Not sure / consultation required
☒ Artificial Intelligence / Machine Learning
☐ Analytics

☒ CPU Compute

☐ Database / Data Warehouse

☒ GPU Compute

☐ High-Capacity Networking

☐ High-Speed Networking

☒ High Performance Computing

☒ Storage

☐ Other (please specify):

19. Do you have cloud services or databases that need to be migrated to Oracle Cloud?

☐ Yes   ☒ No

20. Which cloud infrastructure platforms have you used for your research, currently or in the past?

☐ I have not used cloud computing in my research work

☒ Amazon Web Services (AWS)

☒ Google

☐ IBM

☐ Microsoft Azure

☒ On-Premise Infrastructure

☒ Other (please specify): (Texas Advanced Computing Center- TACC)

21. Please describe or estimate what technical support will be required to transition and conduct your research on Oracle Cloud, if any (e.g. infrastructure support, tools support, data loading support, admin support, etc.):

> Please be as descriptive as possible:
> We will require brief tutorials on using Oracle Cloud, including running instances, storing, and transferring data, and developing web applications. After these initial consultations we anticipate that only sporadic support will be required.

22. Does your project require any specific privacy restrictions or security requirements?

Select at least one:

☒ My data has no extra restrictions or required protections

☐ Data sets that include personally identifiable information (PII)

☐ GDPR restricted data

☐ Geographically restricted data (e.g. my data must remain within my country borders)

☐ HIPAA restricted data

☐ Proprietary data

☐ UK government data

☐ US federal data requiring FEDRAMP certifications

☐ Other (please specify):

Oracle meets a broad set of international and industry specific compliance standards for service deployments in Oracle Cloud. Learn more here.

23. **Will you be willing to share benchmark data or other Cloud-performance related data with Oracle (for example, comparing Oracle's cloud infrastructure with on-premises or an alternative cloud infrastructure provider)?**
☒ Yes   ☐ No

Project Support:

24. **Is this research project supported or funded by an external agency or organization?**
☐ Yes   ☒ No

If yes, please note any significant external funding, grants or in-kind contributions
(e.g. 25K or more). If no, please provide information on your lab's current funding support:

This project is not yet funded, but this project will allow us to generate the preliminary results needed to secure long-term funding for this initiative.

The lab is currently funded by two NIH Research Project Grants (R01), one (RO1-XX) active from 2019-2024 at $250k/year and the second (RO1-XX) active from 2021-2026 at $250k/year. Dr. Sattler is funded by a NIH K99 award.

25. **Are you aware of any ongoing sales transactions, open requests for proposals (RFPs) or any recently closed business deals between Oracle and your institution?**
☐ Yes   ☒ No

26. **To your knowledge, does Oracle have or has Oracle had in the past, any business relationships with this University or any of the professors or graduate students involved in this project?**
Include any past or pending research payments from Oracle to this University and any professors or graduate students from this University that worked for Oracle in the past three (3) years or are presently working for Oracle.
☐ Yes   ☒ No

If yes, please provide details about the relationship(s) and the Oracle LOB(s) involved:

27. **To your knowledge, does/do the professor(s) or graduate student(s) have any other ties to Oracle, such as a relative employed by Oracle or any ownership/interest in a company that may be a vendor to Oracle?**
☐ Yes ☒ No

If yes, please provide details:

28. Do you intend to submit papers resulting from this project?

> Please specify the anticipated number of publications and which journals you intend to submit to, if known:
>
> We anticipate publishing 3 papers while completing milestones 1-4.
>
> Milestone #1-2: *Frontiers in Genetics*
> Milestone #3: *Journal of Neuroscience*
> Milestone #4: *Nature Methods*

☒ I plan to submit my papers
☐ I don't intent to submit my papers to peer-reviewed journals
☐ I don't intend to publish my results anywhere

29. Research summary for Oracle for Research's public <u>website</u>:

> **Please provide 1-2 paragraphs describing the research. If chosen, this information about your project will be displayed on Oracle's website:**
>
> Rare genetic mutations in the nervous system can have debilitating and devastating effects on patients that severely diminish quality of life. Due to the rarity, minimal funding, or lack of data, patients with rare genetic mutations and their families are often left without answers or without effective treatment options.
>
> In this proposal, we aim to create a novel ML platform that uses molecular dynamic simulations to predict the phenotypic consequences of rare genetic mutations of the nervous system. For this pilot project, changes to the *SCN8A* gene will be the focus but we plan to expand the platform to be applicable to numerous genes important to neuronal function. Once completed, the platform will be made publicly available so patients or doctors can input mutation information and receive preliminary estimations on the phenotypic characteristics of the mutation in question. Insights from our platform may also provide suggestions into which drug(s) are effective for treating the phenotypic consequences this mutation, and users can even screen the ZINC database (on Oracle Open Data) against their mutation through a secondary analysis pipeline. With permission and de-identification, all data from users of the platform will also be ported to Oracle Open Data and made publicly available where it can act as a helpful reference to researchers, doctors, or patients suffering from similar mutations. Users will also have the option to provide relevant clinical data that accompanies their mutation in the hopes of helping others.

30. **Outreach initiatives within the research community are both valuable and appreciated by Oracle. Please select all options that apply to you:**

☒ I am willing to act as a reference for future customers

☒ I am willing to recognize Oracle as a funder in any publication of my research results

☒ I am willing to include my computational methods, with appropriate details regarding my use of Oracle Cloud Infrastructure, in the methodology section of any published papers or posters

☒ I am willing to write a guest article with my by-line included for the Oracle for Research blog

☒ I am willing to be featured as an Oracle for Research case study

☒ I am willing to discuss my work with Oracle for Research at seminars within my university or organization

☒ I am willing to discuss my work with Oracle for Research in external webinars, meetings and conferences including attending/participating in lunch and learn sessions, providing short talks in exhibit booths, attending coffee or happy hours or participating in / co-leading BoF sessions on relevant topics

☒ I am willing to act as a collaborator to other Oracle for Research participants

☐ I am not willing to share my work or participate in any reference, marketing or PR activities related to this project