LEADER IN RESEARCH, HEALTH CARE AND INNOVATION

$1.54 billion annual research funding
FY 2021

No. 4 public institution for startup creation
Milken Institute

4th best public university for high-quality science
Nature Index

UC San Diego Health is ranked 1st in San Diego and 5th in the state, placing it among the nation’s best hospitals
U.S. News & World Report

3,019
Faculty members (honors include Nobel Prize, Fields Medal, Pulitzer Prize, National Medal of Science, Presidential Medal of Freedom, Grammy Award)

140,764
Freshman and transfer applications

40,483
Students
BY THE NUMBERS

Economic Impact

$16.5 billion annual economic impact in California — more than the entire annual revenue of the state of Arizona

100,492 jobs supported across California

More than 1,000 companies utilize, or have utilized, technology created at UC San Diego

National Rankings

No. 3 best public college in the nation
Forbes

No. 4 public university for providing an outstanding education at an affordable price
Princeton Review

8th best public university in the nation
U.S. News & World Report

18th best university in the world
Academic Ranking of World Universities

UC San Diego: Founded November 18, 1960
From https://ucsdnews.ucsd.edu/pressrelease/ucsd-breaks-record-1.54b-in-research-funding

Funding from federal agencies reached $891 million, an increase of 7.1% from last year's number. The largest portion of federal funding came from the National Institutes of Health at $549 million. Other significant federal funding came from the National Science Foundation ($138 million), the Department of Defense ($90 million) and the Department of Energy ($40 million). Contracts and grants from industry sponsors accounted for $193 million, while funding from the state of California totaled nearly $25 million. Funding from private and non-profit organizations exceeded $267 million. Research gifts—defined as monies donated to support the university’s general research enterprise—rose to $149 million, an increase of nearly 32% over last year.
Welcome to our Innovation Portal. Choose an option!

- Undergraduates & Graduates
- Faculty, Researchers, & Staff
- Alumni, Industry, & Community
Vision
To be the world’s most innovative university, driving economic and social prosperity
The Innovation & Commercialization Loop

INNOVATE

- Patent
- Research
- Evaluate
- Disclose

Commercialize

- Benefit
- Develop
- Spin Out
- License

OIC will work closely with innovator through all phases of the cycle

- Disclose to OIC before publishing
- Assess novelty, potential & obligations
- Seek commercial opportunities
- License, develop, monitor diligence, support startups
- Pursue patent strategy in sync with merits & market
- Launch startup if advantageous
- Commercialize, reap economic & social benefit, fuel new research

Assess novelty, potential & obligations

Pursue patent strategy in sync with merits & market

OIC will work closely with innovator through all phases of the cycle
Innovation & Commercialization Managers
(Licensing Officers)

Physical Sciences
- Victoria Cajipe
- Andrei Chakhovskoi
- Skip Cynar
- Parth Majmudar
- Julie Eason (Analyst)

Life Sciences
- Donna Shaw
- Devora Rossi
- Chris Loryman
- Brendan Daly
- (Recruiting)

Other Functional Groups
Intellectual Property: 6
Finance and Operations: 7
Innovation Design: 7

License New Technologies

UC San Diego researchers create more than 400 new inventions, copyrights and tangible research materials each year.

Associate Vice Chancellor – Paul Roben
eDisclosure System

https://blink.ucsd.edu/research/conducting-research/edisclosure/index.html

Disclosure workflow:

- Click on disclosure form link to start disclosure process
- Fill out disclosure form
- Click Submit button
- OIC staff reviews submission
- OIC Staff accepts disclosure as complete
- Disclosure assigned to Licensing Officer for review
- Make requested changes to disclosure
- Disclosure not complete
- OIC Staff returns disclosure to inventor with specified changes
- STATUS CHANGE: Returned

* Wellspring Sophia System
Disclosure-Patent-License-Compliance-Distribution
Patent Timeline

- Provisional / PCT / national filing
- UCSD budget typically supports US patent rights
Patent Decisions

Licensing Officers

- Relatively liberal for provisional filings (lower cost)
- Stricter for full patent application (higher cost)
  - advanced to prototype/pre-commercial
  - evidence of commercial interest/potential (publication/marketing*)
  - track-record of researcher
  - technology high priority for researcher
- For “gray area” cases
  - may refile a provisional to preserve US rights
  - sometimes consult with experts, counsel

Marketing

- Have online “catalogue” of tech descriptions (UC system/other data bases)
- Also UCSD news articles on web about innovations
- Majority of deals sourced from inventors, entrepreneurs, ecosystem
- US government-funded inventions: obligation to “market”
Copyright Disclosures

• **Works/software owned by UC Regents**
  ✓ UC Copyright Policy
  [https://copyright.universityofcalifornia.edu/ownership/works-created-at-uc.html](https://copyright.universityofcalifornia.edu/ownership/works-created-at-uc.html)

• **UC Copyright Notice**
  [https://innovation.ucsd.edu/copyright-notice/](https://innovation.ucsd.edu/copyright-notice/)

This software is Copyright © 2XXX The Regents of the University of California. All Rights Reserved. Permission to copy, modify, and distribute this software and its documentation for educational, research and non-profit purposes, without fee, and without a written agreement is hereby granted, provided that the above copyright notice, this paragraph and the following three paragraphs* appear in all copies. Permission to make commercial use of this software may be obtained by contacting the Office of Innovation and Commercialization (OIC).

* OIC contact info; “as is”; no warranty/liability
Traditional License Terms

• **Financial terms**
  - ✓ License issue fee
    - o Equity in start-up companies
  - ✓ Annual maintenance fee
  - ✓ Milestone payments
  - ✓ Earned royalties
    - ✓ % of Net Sales
    - ✓ $ /product sold
  - ✓ Sublicense royalties & fees
  - ✓ Patent cost reimbursement
    - o Past & future

• **Non-financial terms**
  - ✓ Definitions
  - ✓ Grant (XL/NXL)/field of use/territory/term
  - ✓ Diligence milestones
    - ✓ Prototype
    - ✓ Clinical trials
    - ✓ First Commercial Sale
  - ✓ Warranties and indemnification
  - ✓ Patent matters
Open Flow Innovation
Startup License

• Remove barriers to tech transfer
• Streamline and simplify agreements
• Remove barriers for startup companies

*5% Equity License
Subject to certain conditions
- IP is not therapeutic or med device requiring clinical trials (high-sales, high-value technologies)
- IP no conflicting obligations
- Inventor consent
- New startup founded on UCSD IP
Open Flow Innovation Startup License

• Financial terms
  ✓ License issue fee
    ○ $500 + 5% Equity*
      ✓ Anti-dilution up to $X Millions
      ✓ Participation rights
  ✓ Annual maintenance fee
  ✓ Milestone payments
  ✓ Earned royalties
    ✓ % of Net Sales
    ✓ $/product sold
  ✓ Sublicense royalties & fees
    ○ 10% in Open Flow 2.0
  ✓ Patent cost reimbursement
    ☞ Past & future: possibility to move management to licensee

• Non-financial terms
  ✓ Definitions
  ✓ Grant (XL/NXL)/field of use/territory/term
  ✓ Diligence milestones
    ✓ Prototype
    ✓ Clinical trials*
    ✓ First Commercial Sale
  ✓ Warranties and indemnification
  ✓ Patent matters

*Model holds only for IP not requiring clinical trials which typically have potential to generate significant future royalties

*Assume that startup is C-corp.
If LLC, “shadow equity”: liquidity event milestone payment
Innovation Ecosystem

https://innovation.ucsd.edu/
OIC “AIM” (Accelerating Innovations to Market) Program

Technology Acceleration

Year One:

230% return on investment

- $510k Invested (13 projects at $20-50k each)
- 6 startups
- 4 new IP agreements
- 26 undergraduate + graduate students engaged

Year Two:

Bioengineering
Non-invasive Gastric Monitoring (with IGE)

Gastroenterology
Novel Colonoscopy Device (with CTRI)

Qualcomm Institute
Hacking Gaze Behavior for Autism

Radiology
MRI Quality and Guidance System

“Gap funding”
* UC system also has funding programs periodically
Advance multiple compounds to an IND-ready stage in a collaborative, cost-effective, and efficient manner.

https://www.poseidoninnovation.com/

Other Partnerships

bridgebio

“Gap funding”
Innovation Zones
Removing Risk from Industry Partnerships

The only UC Campus with unique approach to sponsored research
Enables upfront license for future intellectual property
Reduces timeline and risk

https://blink.ucsd.edu/research/preparing-proposals/sponsors/industry/innovation-zones.html
Education & Mentorship

- Institute for the Global Entrepreneur
  - NSF i-Corps program
  - Accelerator programs

- Rady School of Management
  - Lab to Market

- Certificate in Entrepreneurship

- Mentorship through various accelerator programs

- Seminar series: IP, company formation, fund raising, etc (law firm sponsored)
Accelerator Programs
Campus-wide resource for research-based entrepreneurship

- Life sciences, physical sciences, engineering, pitch prep
- Close alignment with commercialization portfolio
- Source and prepare opportunities for startup formation
Investment Prep

Stage of Development
Concept Formulation
Laboratory Testing
Feasibility Prototype
Proof of Concept
Market Validation
Commercialization

Sources of Funding $  Government Grants/Philanthropy
Corporate $/ Venture Capital/ SBIR

The Pitch Prep Role

Technology Research

Monetization

Idea Graveyard

UC San Diego
RESEARCH AFFAIRS
Office of Innovation and Commercialization
Co-investment
Mentorship
Network
Database

Venture capital for university innovation.
All stages, all sectors, all in.

https://oup.vc/
Center for Novel Therapeutics

Research

Biotech/Pharma

Startup Accelerator
Entrepreneurial Journey

**IDEA**
- Changemaker Institute
- Entrepreneur Certificate
- Design Lab
- Startup Tree
- I4NS

**NEW VENTURE**
- Legal Office Hours
- BlueLINC
- Collab
- The Basement
- Global Ties
- Envision
- QI
- The Licensing Process

**ACCELERATION**
- OIC: Venture Funding
- OIC: Regional Resources
- Investment Prep
- SBIR
- Triton Challenge
- Xtreme Tech Challenge

**SCALE**
- StartUp SD
- CIID
- IGE
- QII5
- CNT

UC San Diego
RESEARCH AFFAIRS
Office of Innovation and Commercialization
UC San Diego Startups
NanoCellect accelerates growth plans with close of $35 Million in Series C & D Rounds led by Vertical Venture Partners and Warburg Pincus

SAN DIEGO, Calif., Sept. 16, 2021/PRNewswire/ -- NanoCellect Biomedical Inc. ("NanoCellect"), the market-leading provider of microfluidic cell sorting solutions to advance cellular discoveries announced the close of $35M of financing to further accelerate commercial growth plans and new product development goals.

Benchtop Microfluidic Cell Sorter

The WOLF and WOLF G2 are an entirely new type of microfluidic cell sorter based on modern flow cytometry methods.

[Request Info / Demo]

https://nanocellect.com/
No pain, still a gain? Biolinq raises $100 million for needle-free biosensors for diabetes monitoring

San Diego startup’s micro-array sensing platform aims to make continuous sensing simple and more accessible

BY MIKE FREEMAN
NOV. 2, 2021 5:01 PM PT

San Diego’s Biolinq Inc., which is developing tiny dermal biosensors to help people with diabetes track their blood sugar needle free, has raised $100 million in a second round of venture capital investment.
• Founded by UC San Diego grad students/postdocs with faculty as advisors
• Founders were product of UCSD/San Diego innovation ecosystem
• Were awarded millions of funding by NIH through SBIR program, some contracted back to UCSD
• Both now included in international market projection studies in their respective industries, poised to be major players
• Both remain connected with UCSD
Post Licensing

- Licensee compliance / diligence, patent prosecution
- License revenue distribution

35% to Inventors
- Equally divided
- Unless agree otherwise

1/3 per Stakeholder
- Alternative possible:
  - 85% Project
  - 15% General

Inventions
- Inventors
- PI Lab
- Department
- General Fund
- UCOP

Copyrights
- Authors
- Department
- General Fund

UC San Diego
RESEARCH AFFAIRS
Office of Innovation and Commercialization
*Preliminary numbers are given for FY2021 (July 1, 2020 – June 30, 2021)

- Disclosure intake comparable to pre-pandemic level
*FY2021 numbers are preliminary
✓ Also in FY2021: 245 provisionals, 89 PCTs filed, 131 non-US patents issued
Commercialization @UC San Diego - OIC

*FY2021 numbers are preliminary
✓ Deal flow comparable to pre-pandemic
Commercialization @UC San Diego - OIC

New Licensee Startups

*FY2021 numbers are preliminary
✓ Startup activity exceeded two previous pre-pandemic years!
# National Ranking - Number of Startup Licensees (calendar/UCSD fiscal year)

<table>
<thead>
<tr>
<th></th>
<th>2017</th>
<th></th>
<th>2018</th>
<th></th>
<th>2020</th>
</tr>
</thead>
<tbody>
<tr>
<td>MIT</td>
<td>29</td>
<td>MIT</td>
<td>32</td>
<td>MIT</td>
<td>32</td>
</tr>
<tr>
<td>Stanford / UCSD</td>
<td>22</td>
<td>Columbia</td>
<td>29</td>
<td>U Michigan</td>
<td>31</td>
</tr>
<tr>
<td>Columbia</td>
<td>21</td>
<td>Stanford / UCSD</td>
<td>28</td>
<td>UCSD</td>
<td>23</td>
</tr>
<tr>
<td>Purdue</td>
<td>21</td>
<td>Purdue</td>
<td>25</td>
<td>Stanford/Purdue</td>
<td>22</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>U Pennsylvania</td>
<td>21</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Columbia</td>
<td>19</td>
</tr>
</tbody>
</table>
RESEARCH TO RENEWAL:
ADVANCING UNIVERSITY TECH TRANSFER
May 6, 2022
M. Feldman, M. Gates, M. Ratnatunga, R. Devol, D. Shideler

Sources: AUTM, Lens.org, and JobsEQ.
"Normalized" metrics were divided by research expenditure or other parameter prior to ranking.

https://heartlandforward.org/case-study/research-to-renewal-advancing-university-tech-transfer/
Thank You!

https://innovation.ucsd.edu/

vcajipe@ucsd.edu