

WELCOME TO

Sector Spotlights

Life Sciences Lunch & Learn



Today's Program

Developing International Life Science Markets from Maine's Rural Communities

Life Sciences Lunch & Learn

Global R&D at the Jackson Laboratory

Michael Ellis, PhD
07/24/2024



Michael Ellis, PhD



- **PhD in Biomedical Engineering** from the University of Virginia
- Previous positions in **Engineering at Siemens** and **Product Development and Product Management** at WL Gore & Associates
- **Current position:** Senior Director, R&D, JAX
- Based in **Seal Harbor, ME**



Our Mission

We discover precise genomic solutions for disease and empower the global biomedical community in our shared quest to improve human health.



ABOUT JAX

1929

Founded in
Bar Harbor, Maine

26

Nobel Prize
Associations



11

JAX locations
globally

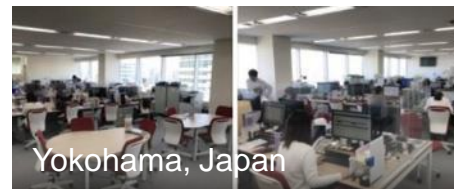
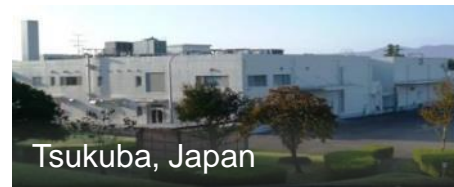
3000

Employees
400+ with Ph.Ds

10,000+ trainees have
participated in JAX courses



11 Global Locations



World-class Academic Research Linked with Unparalleled Commercial Scale



**JAX[®] Mice, Clinical
& Research Services**

#1 U.S. provider
of mouse models &
services; #2 globally

JAX Research

90+ years of expertise
in human genomics,
mouse genetics,
interface



R&D is organized into 6 primary capabilities in 3 areas of discipline

In Vivo

- Build and drive adoption of high value model platforms and associated services

New Models & Services



- New tools and methods of colony management for maximum efficiency, quality, and 3Rs

Husbandry Science



In Vitro

- Improved capabilities for mouse & cell model generation, primarily for cost, speed, and quality

Cell & Developmental Biology



- Tools and techniques to maximize the productivity of mice using both in vitro and in situ solutions

Reproductive Biology



Engineering

- Software engineering and data science for both product integration and internal research

Data Science



- Process and mechanical engineering in support of driving vivarium operations efficiencies

Process Engineering



Today we'll focus on three example areas

In Vivo

- Build and drive adoption of high value model platforms and associated services

New Models & Services



In Vitro

- Tools and techniques to maximize the productivity of mice using both in vitro and in situ solutions

Reproductive Biology



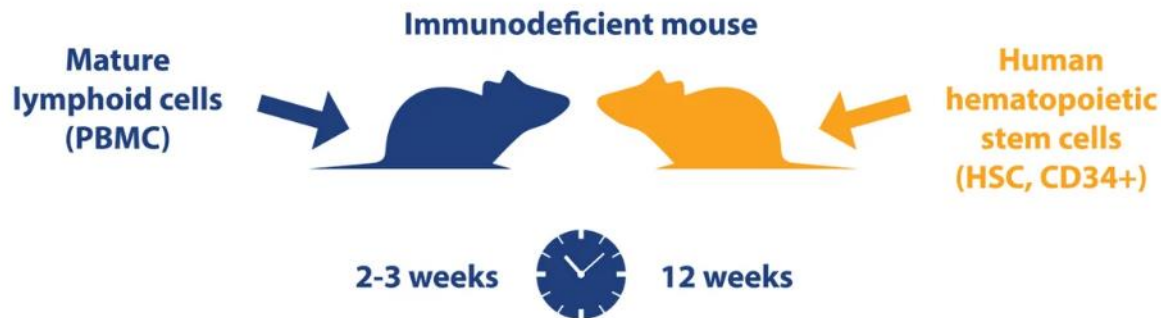
Engineering

- Software engineering and data science for both product integration and internal research

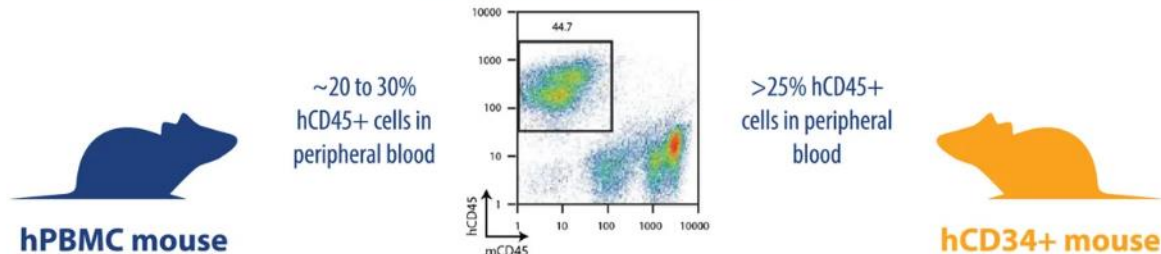
Data Science



Mouse models with human immune systems and human organs and tumors



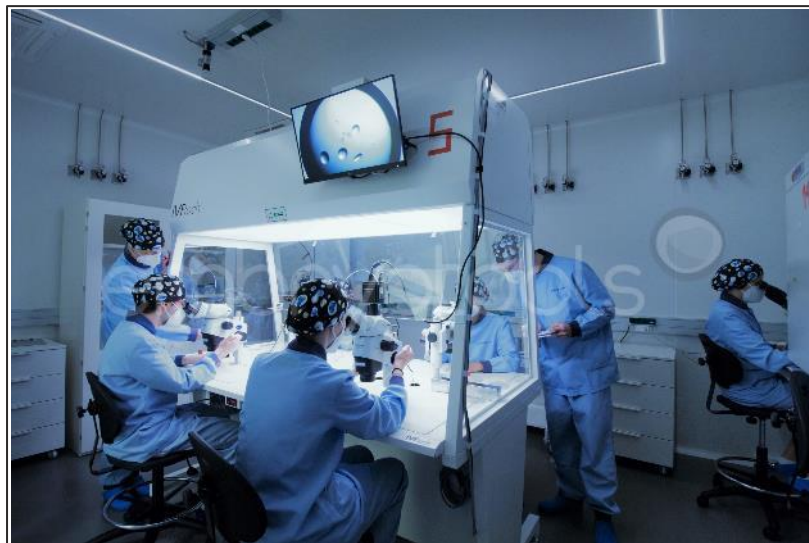
Engraftment validation



We aim to drastically reduce the cost of producing millions of mice across 14,000 strains through reproductive technologies

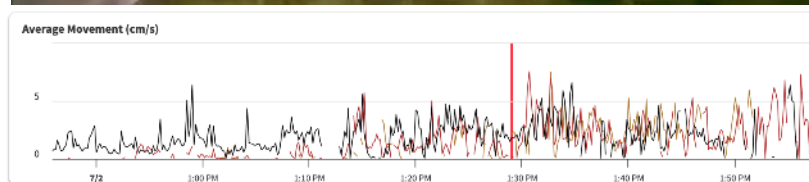
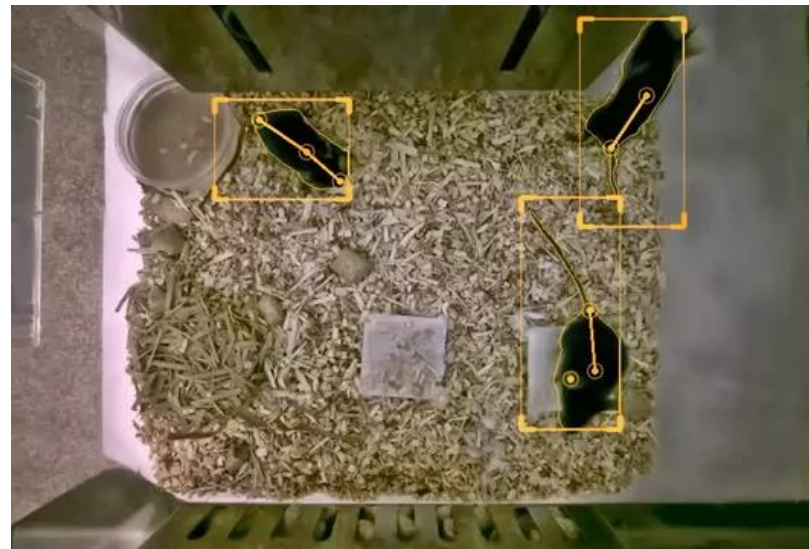


- Space intensive
- Resource intensive
- Requires more animals



- Highly scalable with limited resources
- Enables global supply chain
- Produce only the exact animals to ship

We are building AI-enabled tools to support translatable animal research

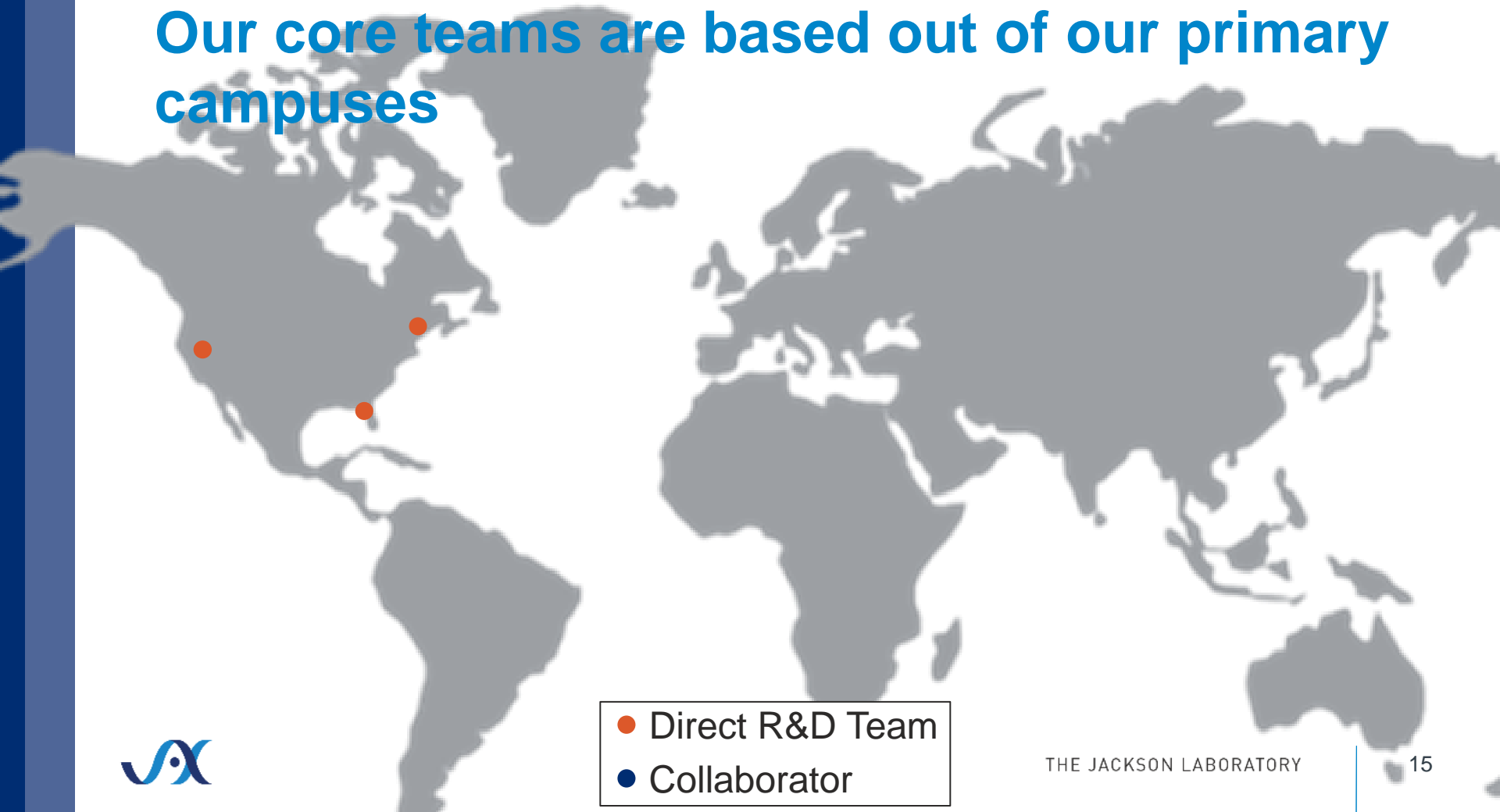


R&D organization has ~50 global employees + a network of collaborators



- Direct R&D Team
- Collaborator

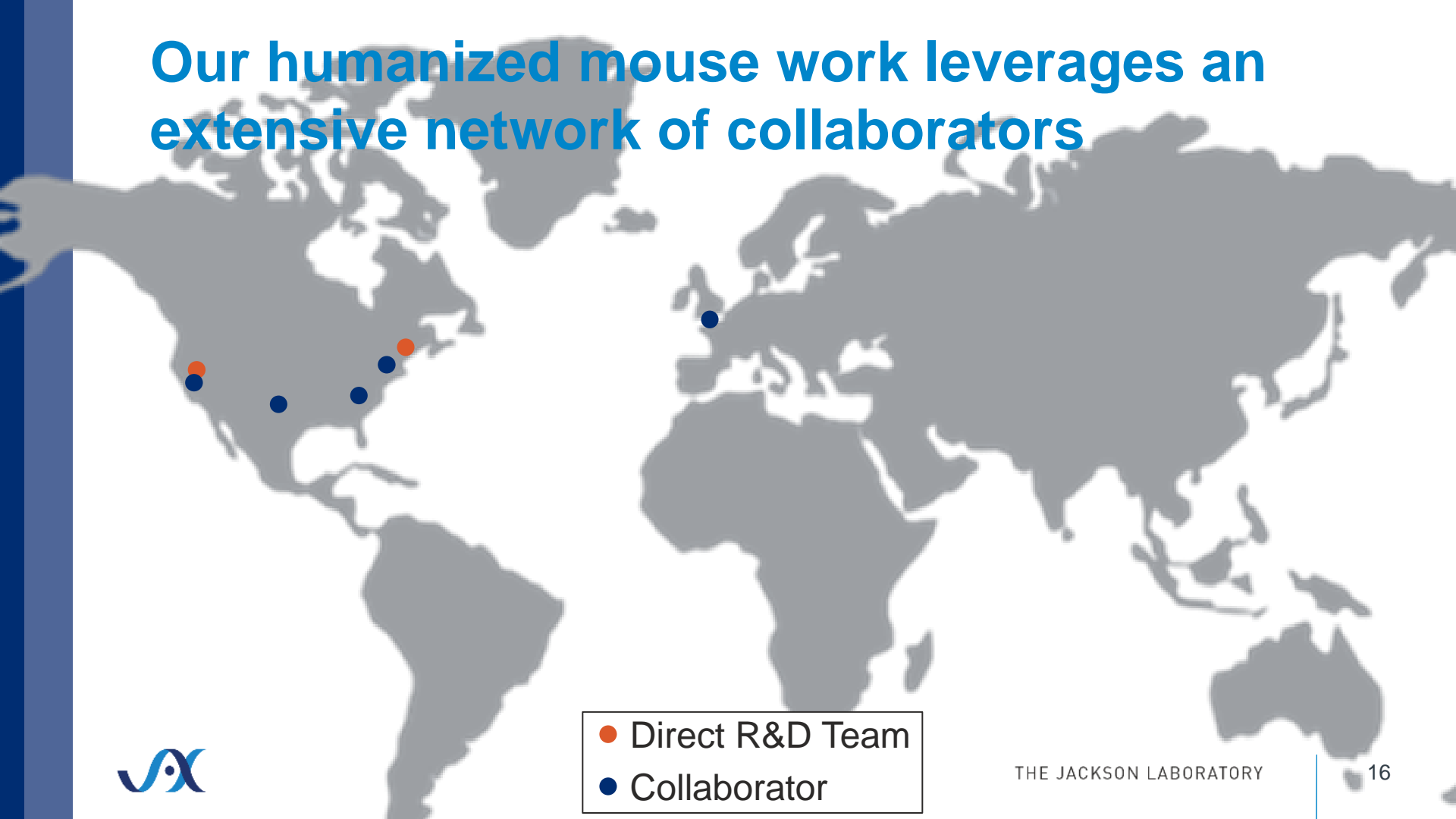
Our core teams are based out of our primary campuses



- Direct R&D Team
- Collaborator

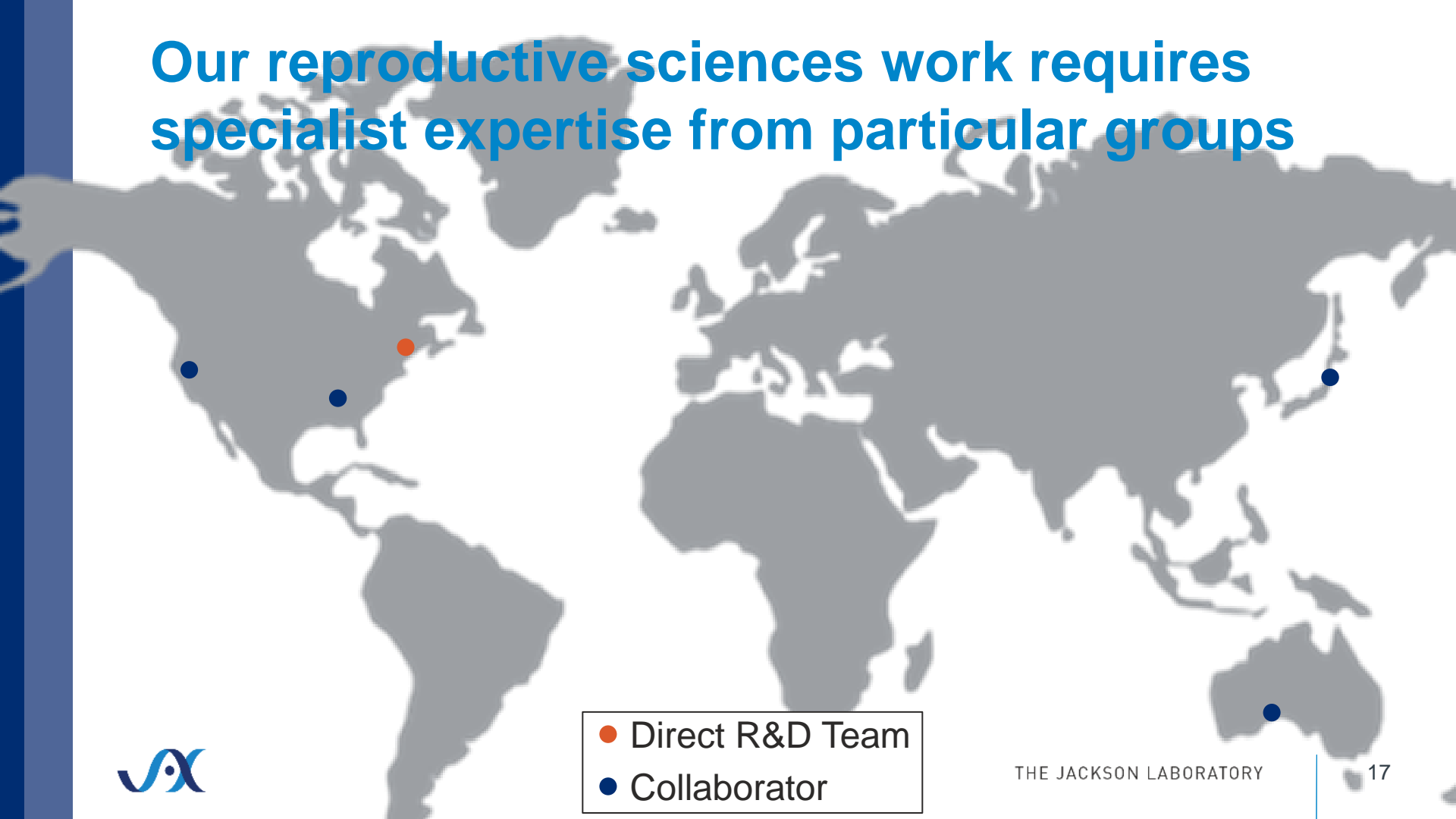


Our humanized mouse work leverages an extensive network of collaborators



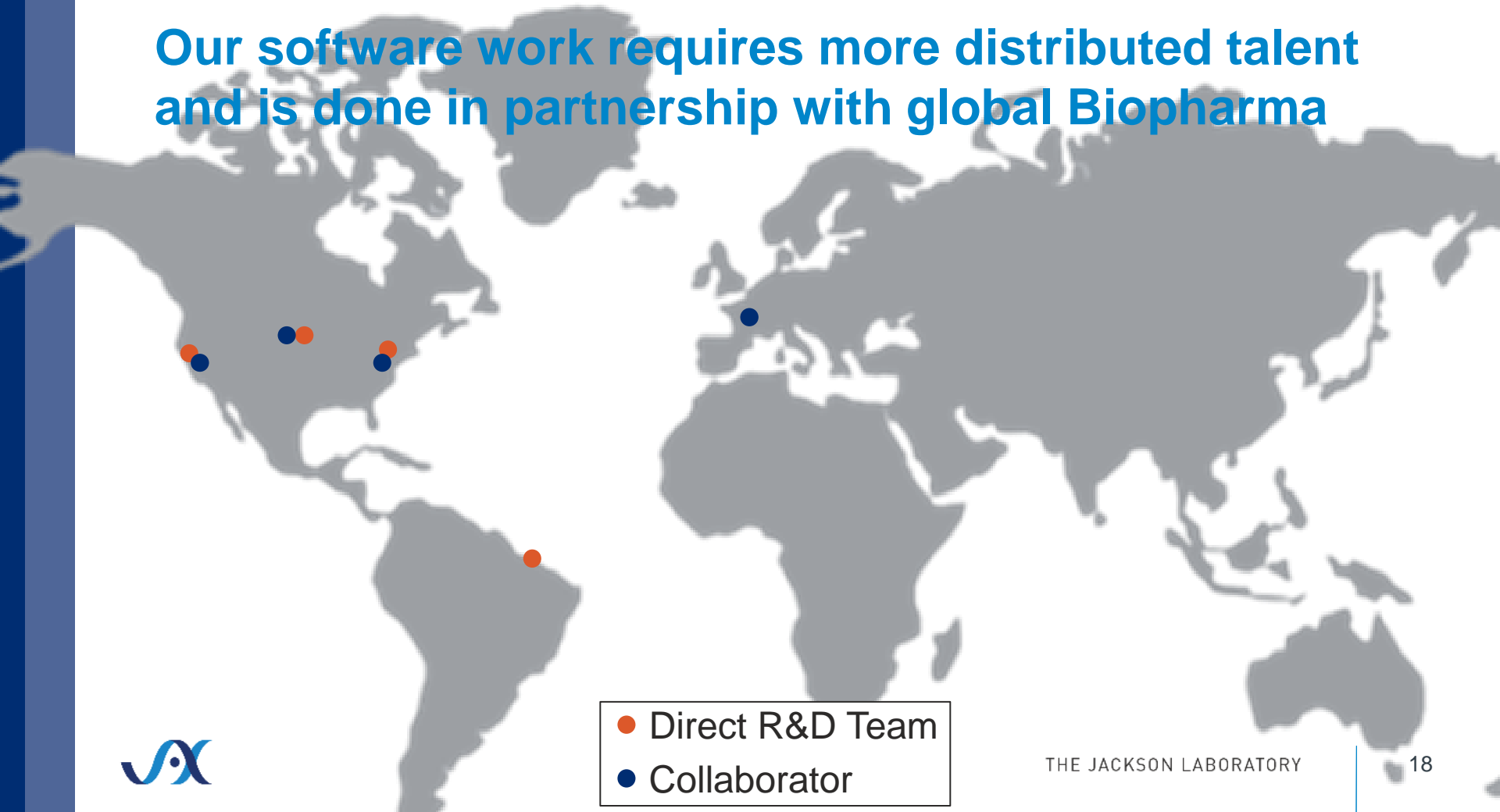
- Direct R&D Team
- Collaborator

Our reproductive sciences work requires specialist expertise from particular groups



- Direct R&D Team
- Collaborator

Our software work requires more distributed talent and is done in partnership with global Biopharma



- Direct R&D Team
- Collaborator

Running a world-class R&D organization in biotechnology from Downeast Maine has benefits and drawbacks

- Recruitment to Bar Harbor is quite difficult
- Isolation allows for deep and highly specialized expertise in the talent pool
- Travel to Bar Harbor is extremely difficult, limiting opportunities for onsite face to face engagement
- Summer student program creates a virtuous cycle





THE JACKSON
LABORATORY

A person with blonde hair in a braid, wearing a red jacket, is seen from the back, looking out over a large body of water under a clear sky. A lobster is perched on their right shoulder. The scene is serene and suggests a coastal or maritime setting.

FOCUSMAINE

For a Stronger Maine Economy

BOARD/LEADERSHIP TEAM

Michael Dubyak, (Co-Chair) Former President, CEO, & Chairman of WEX, Inc.

Andrea Cianchette Maker, (Co-Chair & President) Former Partner, Pierce Atwood LLP

Michael Bourque, President and CEO, MEMIC

Jay Dearborn, Chief Strategy Officer, WEX, Inc.

John Fitzsimmons, PhD, President, Foundation for Maine's Community Colleges

Charles E. Hewett, PhD, Executive Director, Institute for Digital Engineering and Life Sciences

Ed McKersie, Founder & President, ProSearch, Inc.

Kristen Miale, Managing Director, Caswell Advisory Group, LLC, former President, Good Shepherd Food Bank

Amanda Rector, Maine State Economist

STAFF



**Andrea Cianchette
Maker**
President



Leo Waterston
Program Director



Courtney Crossgrove
Food and Agriculture
Program Manager



Mari Smith
Manager of Strategic
Comm. & Outreach

(Currently hiring)
Grants and Finance Manager

GUIDING PRINCIPLES

MISSION

Propel the growth of Maine's most promising industries and transform Maine into a hub for top talent.

VISION

Enhanced opportunity and prosperity for all Mainers through the power of good jobs and a strong economy.

STRATEGY

Guided by private-sector leaders, we strengthen competitive industries and enhance workforce skills. By focusing on key sectors, we boost job creation and import revenue, fostering widespread economic growth for all Maine residents.



FOOD ECONOMY



BIOECONOMY



WORKFORCE



PROSPERITY FOR MAINE

SECTOR IMPACTS TO DATE

- 5,000 new jobs were created in our key sectors between 2016 and 2021.
- At least 466 direct and 447 indirect and induced jobs were catalyzed by FocusMaine programs.
- \$175.8 million in sales revenue and nearly \$50 million in earnings were realized by companies participating in our programs.
- 200 businesses and entrepreneurs engaged in technical assistance and business development programs.
- 68 life sciences businesses were engaged in business attraction efforts.

WORKFORCE IMPACTS TO DATE

- **2,700 interns and over 130 Maine employers participated in Maine Career Catalyst, a statewide program for experiential learners working in Maine.**
- **After completing their internships, there was an 11% rise in interns who indicated a significant interest in securing future employment in Maine.**
- **Equity in Internships (EQUIP) program, launched in early 2021, provides stipends to reduce financial barriers for BIPOC students, first generation college students, and women in STEM fields (\$30,000 awarded in 2024).**
 - **2023 Maine Career Catalyst demographics**
 - **26% BIPOC**
 - **61% female, gender non-conforming, or transgender**
 - **22% first-generation college students.**

STRATEGY

- ❑ Unique, coordinated, sector-level economic development
 - ❑ Bioeconomy & Food Economy (based on McKinsey study)
- ❑ Partner with organizations that best provide the needed expertise and support to co-create programs
- ❑ Pursue Four Areas of Work



BUSINESS & MARKET DEVELOPMENT

Help businesses grow to their full potential

GOALS

- Empower entrepreneurs with business and leadership skills
- Greater access to markets with market data, trade shows, branding, and technical assistance
- Greater access to unrestricted capital



BUSINESS ATTRACTION through Bioscience Ecosystem

Attract more companies that believe, as we do, that Maine has what they need to succeed.

2024 Strategies

- Developing a commonly and broadly held vision of Maine's bioscience economy
- FocusMaine Bioscience Advisory Team
- Maine contingent of 20 leaders toured Gainesville, FL bioscience ecosystem
- Maine Life Sciences Network, convened by The Roux Institute under FocusMaine program

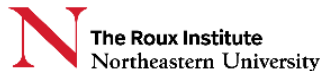


ELIMINATE SECTOR BARRIERS

Create stronger ecosystems and unlocking growth potential for our sectors

GOALS

- Aquaculture Social Acceptance & Education
- Improving Business Attraction & Incentives
- Accelerating Science & Innovation



WORKFORCE DEVELOPMENT

Empower the future workforce through skills, connections, and work experience.

GOALS:

- Build Sustainable Talent Pathways
- Workforce Training & Education
- Showcase Career Opportunities in the Innovation Economy



FoodTech Maine

An accelerator program for food tech companies to commercialize and scale their business, led by Maine Center for Entrepreneurs & funded by Small Business Administration

- FoodTech Showcase
 - Over 100 people attended the event held at the McGoldrick Center at USM
- Recruiting for Cohort 2



Cohort 1

- **Springtide Seaweed:** First-of-its-kind shelf stable seaweed gel
- **Ocean Farm Supply:** 100% home compostable, biodegradable mesh bag for seafood and produce
- **Salmonics:** Biomedical products derived from aquaculture byproducts
- **Maine Cap N' Stem Mushroom Co:** Advanced mushroom cultivation products
- **Maine Garum Company:** First commercially produced fish sauce in the U.S.
- **Everything Seaweed:** Seaweed-based materials as an alternative to PFAS
- **Tootie's Tempeh:** fermenting tempeh without plastic bags

Maine Life Science Impact Forum

A program to convene Maine's life science leaders, increase cross-disciplinary collaboration, and advance a common agenda to grow the sector, led by the Roux Institute

- Inaugural Impact Forum held in September, 2023 with 80 attendees - next Forum this September.
- FocusMaine funded two independently selected pilot projects coming out of the work done at the Impact Forum.



NATIONAL & GLOBAL TRENDS & OPPORTUNITIES IN THE LIFE SCIENCES

- **AI and data science are transforming drug development and discovery**
- **Food tech and Ag tech are growing**
- **Biomaterials development and an emphasis on environmental sustainability and sustainable production is growing within the life sciences**
 - **There are federal incentives for this: IRA & Farm Bill**
 - **Transition in materials is progressing**
- **SBIR/STTR funding - NIH potentially interested in funding more in Maine through this program**
 - **Some states have matching funds**

CHALLENGES FOR MAINE'S LIFE SCIENCES SECTOR

- Competition from other states/regions:
 - New Hampshire
 - Rhode Island
 - Worcester, MA
- Lack of bioscience infrastructure
 - Wet labs
 - Incubator facilities
 - Local talent pool
- Housing
 - Rise in housing prices & demand
 - Lack of inventory at all price levels

Rhode Island *Current*



OPPORTUNITIES FOR MAINE'S LIFE SCIENCES SECTOR

- **R&D Bond on the ballot in November - could spur further long-term investment in the sector**
- **Maine builds on EDA Tech Hubs Forest Bioproducts Advanced Manufacturing award**
- **Workforce training & development: Maine Community College System, The Roux Institute, University of Maine System**
- **Bolster state incentives targeting the life sciences & related industries**
- **International “soft landing” program to attract life science companies**

THANK YOU!

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Website: www.focusmaine.org

THANK YOU FOR JOINING US!

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