

A Focus for Our Future

The Exploratorium Research  
and Development Agenda

We believe

that research and development is essential to our work, our organization, and our impact on our world. As the Exploratorium celebrates its first half century, our commitment to continual innovation remains unwavering. We are relentlessly prototyping, testing, and developing novel learning experiences through applied research and development.

This R&D Agenda expresses our organization's learning intentions and provides direction to help us prioritize our activities over the next few years. It outlines the four main themes that will help focus our efforts on important and fertile areas as we inspire museum visitors, empower educators, and collaborate with partners around the world.

We anticipate that sharing these higher-order research questions (with recent examples drawn from our own investigations) may spark additional conversations and fruitful collaborations with similarly curious partners. Partners like you, we hope.



AI-01

## 01. Advancing Inquiry

### Broadening and Deepening Inquiry-Based Learning Experiences

In a world that is increasingly intangible, saturated, and complex, it can be difficult to feel empowered to make sense of it all. What's worse: the degradation of "truth" in popular culture throws fuel to the flames, calling into question what's real and reliable. To confront and navigate our times, it is helpful for individuals to feel that they have the confidence in their own ability for inquiry and the critical thinking skills to make decisions for themselves.

To help people better understand the natural, physical, and social world that they experience, understandings that are created through evidence-based thinking, the Exploratorium develops new methods for people to engage more deeply with the act of questioning. By experimenting with new approaches of inquiry-based interactions, we hope to enable people to go beyond exploring phenomenological ideas to genuinely grappling with them in more critical and evidence-based ways; ultimately, building confidence in their ability to engage with topics of all types, old and new.



AI-02



### Key Questions Initial investigations

What new topics and new modalities of engagement beyond phenomena-based interactive exhibitry, successfully compel people to think more critically?

#### Living Liquid

Using active visualizations to enable people to interrogate data demonstrated that people can be stimulated to ask and answer questions about information. <sup>AI-01</sup>

How can we inspire people to go deeper in their line of inquiry—seeing a thought through from initial idea to evaluating evidence to interpreting outcomes?

#### Integrating Science and English Language Development

Creating new strategies for elementary classroom science instruction featuring arguing from evidence showed the power of discourse to further students engagement in inquiry. <sup>AI-02</sup>

What new professional learning practices lead to greater reach, new audiences, and innovative partnerships?

#### STEAM Starters: Tinkering in Early Childhood Settings

Developing explicit learning dimensions for educators to observe in action provided a foundation for extending STEAM tinkering pedagogy to a new age group. <sup>AI-03</sup>



AI-03

## 02. Exploring Identity

### Understanding the Self in Biology, Psychology and Society

### Key Questions Initial investigations



EI-02

Our minds easily oversimplify and create rigid (often harmful) lines around the notion of identity. Unexamined and inflexible definitions of it can perpetuate social inequities, polarized conflicts, and irreconcilable worldviews.

To reform our understanding of the topic, The Exploratorium is dedicated to creating experiences that invite people to explore the intersecting personal, social, and biological dimensions that compose the complicated and charged phenomenon of identity. By investing in this, we hope to build greater awareness of how the construct of identity is shaped—leading to a world in which people are more curious and empathetic toward those that are presumably “different.”

What new scientific phenomena and designed interactions enable people to expand the way they understand overlapping biological and social selves?

#### Cells to Self

Revealing how cellular and genetic factors work in concert to shape an organism showed the complex biological basis of individual identity. <sup>EI-01</sup>

How can informal learning experiences centered on the role of social identity illuminate inequities and advance social justice?

#### Middle Ground

Creating an interactive urban experience featuring social science exhibits about polarization, stereotyping, and norms fostered public thinking about social issues in real-world situations. <sup>EI-02</sup>

How can we develop our practices to be more welcoming, representative, and just toward diverse audiences and collaborations?

#### Self, Made

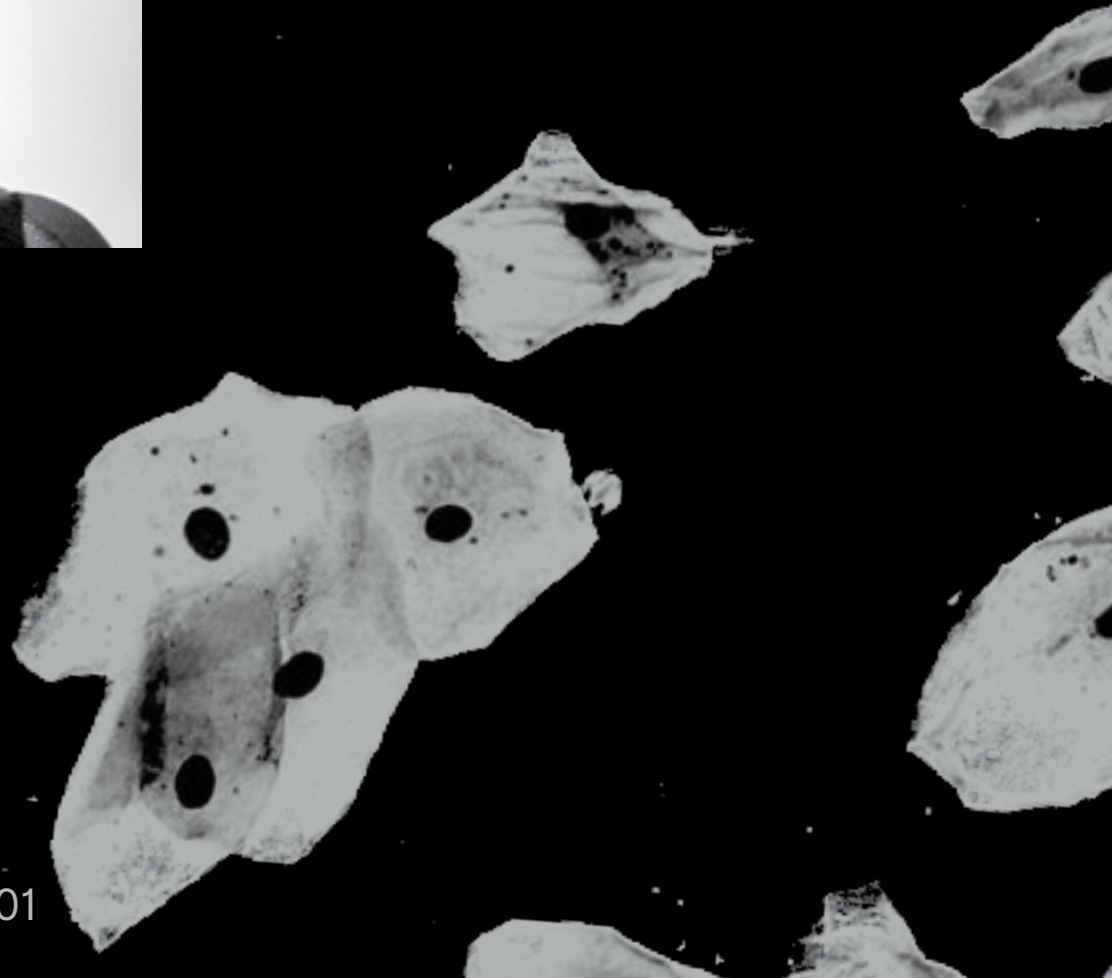
Designing exhibits in collaboration with diverse external partners illustrates the critical importance of including other perspectives to create welcoming learning environments for all. <sup>EI-03</sup>

Photo Credit: Jonathan Pulley/Museum of Pop Culture.



EI-03

EI-01



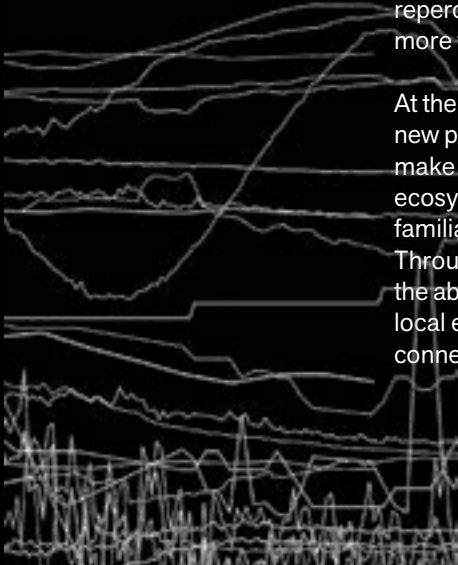
## 03. Engaging Ecology

### Expanding Place-Based Environmental Pedagogies

### Key Questions Initial investigations

We are inherently part of many complex ecosystems; but conceptually we struggle to understand our role as individual actors within such vast systems. Yet more than ever, the collective decisions we make every day have repercussions and ripple effects on so much more than ourselves.

At the Exploratorium, we're invested in creating new place-based pedagogies that help people make sense of—and better relate to—abstract ecosystems by leveraging the context and familiarity of their surrounding environments. Through this, we hope to help people develop the ability to make the connection between local environments and how they impact and connect to global Earth systems.



EE-02

What communication strategies catalyze people to be more open, engaged, and positive in response to environmental issues?

#### Instrumenting the Landscape

Providing outdoor interactive exhibits helped people investigate, discover, and discuss the forces that will shape the future of San Francisco's waterfront. <sup>EE-01</sup>

What tools can we build to enable public and professional audiences to become change agents and successful collaborators addressing the most pressing environmental issues of our times?

#### Wired Pier

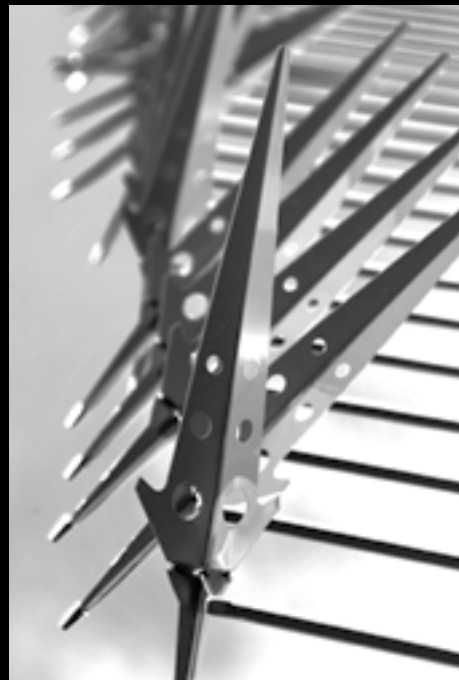
Advancing scientific research and public education through placement of visible environmental sensors at our pier location enhanced public awareness in the methodology, meaning, and importance of time-based observation and environmental investigation. <sup>EE-02</sup>

What new professional learning practices lead to greater reach, new audiences, and innovative partnerships?

#### Conversations About Landscapes

Creating a hybrid exhibition and public meeting space at a location with direct observation of the Bay provided a catalytic environment for encouraging diverse and empowering discussions. <sup>EE-03</sup>

EE-03



EE-01

## 04. Fostering Civic Agency

### Enabling Individuals to Impact Their Physical and Social World

Productive civic engagement is increasingly needed to navigate a world of climate uncertainties, social inequality, and political fractionalization. Yet many of us lack the individual and collective context, confidence, and skills to participate and collaborate toward solutions.

We are prototyping new tools that foster community collaboration by inviting diverse groups of individuals to partner with us to collect, frame, and share information. In doing so, we hope to create a more inclusive world where individuals and communities have agency to ignite change in their physical, social, and political surroundings.



FCA-03



FCA-02



FCA-01

## Key Questions

### Initial investigations

How do we identify, convene, learn from, and inspire different groups of people—policy-makers, scientists, artists, community members, etc.—to collaboratively envision and construct a mutually beneficial and just society?

#### Resilience by Design

Participating in a design challenge bringing together residents, public officials, and experts to develop solutions for sea-level rise illustrated the power of collaborative problem-solving to address critical issues. FCA-01

How do we learn from and support diverse communities in inclusive and welcoming ways that inspires open-minded learning, thinking, dialogue, and decision-making skills?

#### Buchanan Mall

Collaborating with a local community to reinvigorate a five-block city park with storytelling, communal gardening, and interactive science exhibits demonstrated the value of extended listening and on-site dialogue. FCA-02

How do we measure and assess how effective our different strategies are in instilling a greater sense of agency in individuals and accessibility in institutions to affect change?

#### Research on Emerging Adult Learners

Studying the impact of a single museum visit on young adults' science self-efficacy showed how interactive science experiences can improve individuals' confidence to do and learn science. FCA-03

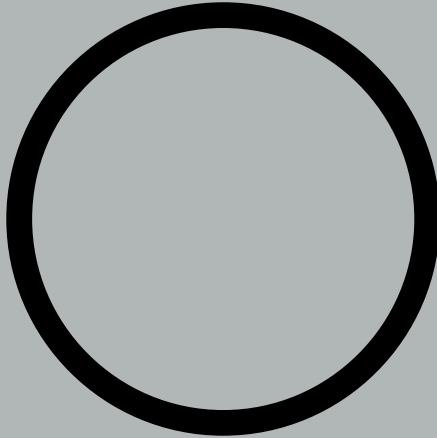
# The Exploratorium

is a portal to the astonishing scientific phenomena that animate our world and shape our actions. We create extraordinary learning experiences for all ages that ignite curiosity, upend perceptions, and inspire brave leaps forward. Through our exhibits, programs, and media, we translate abstract scientific concepts into real-life experiences.

In addition to our San Francisco museum, the Exploratorium provides professional development programs for educators as well as consulting, and we design-build exhibit and exhibit environments for partners around the world.

Our mission is to create inquiry-based experiences that transform learning worldwide. Our vision is a world where people think for themselves and can confidently ask questions, question answers, and understand the world around them.



**expl****ratorium<sup>®</sup>**