

## **GEEK NIGHTS, 2014-2019**

curated by Sarah Barnaby  
The Breathing Project (2014-2017)  
Babies Project (2017-2019)

### **June 24, 2014**

@ The Breathing Project  
*with Sarah Barnaby*

#### **Fluid Phase Transition: A Paradigm for Effortless Transformation**

Our bodies by weight are about 70% water, but we're over 99% H<sub>2</sub>O by number of molecules. Through their affinity for bonding and layering, structuring and destructuring, water molecules mediate our cellular processes, notably through the "phase transition", where a small shift can propagate effortlessly into a massive transformation. We will discuss and embody our fluid nature from an awareness of the properties and behavior of our water molecules.

### **July 10, 2014**

@ The Breathing Project  
*with Amy Matthews*

#### **Immune System**

Looking for new ways to talk about the immune system that don't build on a metaphor of war and defensiveness? Want to embody your immune system and how it participates in and supports the living, evolving network of your body? Join Amy as she explores new ways to talk about and embody the immune system in the Body-Mind Centering paradigm.

### **September 25, 2014**

@ The Breathing Project  
*with Sarah Barnaby*

#### **Collagen**

Join us on Thursday as we geek out on collagen, the most abundant protein in our bodies. We'll delve into how collagen gets created in our cells and the roles it plays when it gets into the extracellular matrix. We'll also explore sensing and moving from the collagen in our own bodies -- is that possible? Let's find out!

### **October 23, 2014**

@ The Breathing Project  
*with Sarah Barnaby*

#### **Collagen, part 2**

In our October event, we'll continue our exploration of collagen and connective tissue in general. We'll review the structure and properties of collagen, and discuss how our internal structure -- and our ideas about it -- might inform our consciousness and movement. Hands-on (collagen) experiences will be included!

### **December 18, 2014**

@ The Breathing Project  
*with Adele Loux-Turner*

#### **Inner Culture: Fermentation and Your Gut**

Join guest host Adele Loux-Turner for a journey into the micro-biome of fermented foods. Adele will teach some of the basics of making fermented foods, and we'll sample some first-hand. After exploring how bacteria shape these foods, we'll shift our focus to how foods shape our gut and our overall well-being. There is a lot of new and evolving research as well as mystery around the questions of what defines gut health, and what is "good bacteria."

### **January 22, 2015**

@ The Breathing Project  
*with Sarah Barnaby*

#### **Bacteria Are Us?**

In our January event, we'll look into the evolutionary origins of life. What do the strategies for survival, adaptation and evolution that emerged in bacteria billions of years ago have to do with us, in our complex, multi-cellular human form? How do each of our cells continue to embody what ancient bacteria figured out hundreds of millions of years before the first animals?

Join us as we weave together threads from previous **Geek Nights**, including life, the nature of consciousness, and symbiotic relationships, and follow the microbial theme that was cultivated and cultured (pun intended) in our most recent **Geek Night** on fermentation and the microbiome with Adele Loux-Turner.

### **February 26, 2015**

@ The Breathing Project  
*with Sarah Barnaby*

#### **The Evolution of Embryology**

We'll follow the bacterial thread from previous Geek Nights, zooming in this month to the transitions from bacteria to eukaryotic "protocists" and from there to animals. In particular, we'll inquire into the evolutionary origins of embryological reproduction. How did the egg and the sperm, the dance of chromosomes, and individuals within species come to be? And what that might mean to us as humans?

### **April 23, 2015**

@ The Breathing Project  
*with Sarah Barnaby*

#### **Cell Polarity, Asymmetry & The Leading Edge**

Join us for this month's **Geek Night**, where we'll explore the polarity of cells and the critical role that asymmetrical organization and orientation plays in a variety of cellular functions, including migration, differentiation and embryological development. What can we learn about how we orient ourselves in relationship to space and others by looking at how our cells organize and relate to each other and to their environment?

### **May 28, 2015**

@ The Breathing Project  
*with Amy Matthews*

#### **Blood As Our First Organ**

Join us for this month's **Geek Night**, where we'll consider blood as our first organ. Join Amy as she leads us in an exploration of the embryological development of

the blood, blood vessels and heart, and a comparison of how nerves and blood act as communication systems in our body.

**June 18, 2015**

@ The Breathing Project  
*with Sarah Barnaby*

**Where (and How) Does Consciousness Live?**

Join us for this month's **Geek Night**, where we'll consider consciousness as an emergent (and perhaps fractal) property. We'll travel from micro to macro: from the subcellular world of proteins and water, to swarm-like cell-to-cell interactions, to the level of the multi-cellular, multi-system, vertebrate human organism. What might consciousness mean at each of these levels and how does each level contribute to the whole? Join us as we ponder the imponderable!

**September 28, 2015**

@ The Breathing Project  
*with Sarah Barnaby*

**A Cellular Bestiary: The Beginning**

- Why do we (or should we) care about our cells?
- What are cells like, what do they do and how do they know how to do what they do?
- What does it mean to consider ourselves as (multi)cellular beings?

In the first **Geek Night** of the new season, we'll begin an exploration into the life of our cells, the microscopic living organisms that make up and make us who we are as complex, multi-dimensional human organisms. We'll lay a foundation for exploring the diversity - the bestiary - of our human cells by considering and visualizing the basics of cellular anatomy, cellular communication, cell division and differentiation, and the three germ layers that are ancestors to all of our cells.

**October 15, 2015**

@ The Breathing Project  
*with Sarah Barnaby & Amy Matthews*

**Cellular Swarms: The Beginning**

Bees swarm, fish swim in schools, and starlings gather in murmurations.

We also find swarms in our inner environment, where communities of cells hum, buzz and move in relationship with each other.

Join us for this month's **Geek Night** as we begin an exploration of human and cellular manifestations of swarming. What is a swarm? Where do we find swarming within and between ourselves? What might arise from the collective movement of individuals? Along with a general consideration of swarming, we'll look at the earliest movements of our embryological selves from the perspective of swarming.

**November 12, 2015**

@ The Breathing Project  
*with Sarah Barnaby*

**A Cellular Bestiary: Fiber Artists & Structural Engineers**

Join us for Geek Night and the next installment of A Cellular Bestiary! In this week's event, we'll turn our inquiring minds (and inhabited bodies) to cells that specialize in creating and shaping our internal environment -- fibroblasts, chondroblasts and osteoblasts.

- What are these cells like, what do they do and how do they know how to do what they do?
- How do these cells communicate and interact with each other and their environment as they build our structural spaces and connections -- bones, cartilage, ligaments and tendons?

No prior experience or knowledge necessary -- bring your curiosity about yourself as a multi-cellular community!

### **January 21, 2016**

@ The Breathing Project  
*with Sarah Barnaby*

#### **A Cellular Bestiary: Fibroblasts as Fiber Artists**

Join us for Geek Night and the next installment of A Cellular Bestiary! We'll continue our exploration of connective tissue cells that specialize in creating and shaping our internal environment, this time looking into fibroblasts - the most common and ubiquitous, the most versatile and least specialized of our connective tissue cells.

- What are these cells like, what do they do and how do they know how to do what they do?
- How do these cells communicate and interact with each other and their environment as they build our structural spaces and connections - including fascia, ligaments and tendons?

### **February 25, 2016**

@ The Breathing Project  
*with Sarah Barnaby & Amy Matthews*

#### **Cellular Swarms: The Game of Life**

Bees swarm, fish swim in schools, and starlings gather in murmurations. We also find swarms in our inner environment, where communities of cells hum, buzz and move in relationship with each other.

Join us for Geek Night as we continue our exploration of human and cellular manifestations of swarming. In this week's event, we'll take an embodied approach to exploring the Game of Life, a simulation game devised by mathematician John Conway in 1970. Life (the game) plays itself out based on its initial conditions (the seed) and following three simple rules. Though the rules are few and simple, how each configuration plays out is impossible to predict. We'll consider how Life might relate to the experience of a cellular "agent" in a living swarm.

### **March 17, 2016**

@ The Breathing Project  
*with Sarah Barnaby & Amy Matthews*

#### **Cellular Swarms: Becoming**

Bees swarm, fish swim in schools, and starlings gather in murmurations. We also find swarms in our inner environment, where communities of cells hum, buzz and move in relationship with each other.

Join us for **Geek Night** as we continue our exploration of human and cellular manifestations of swarming. In this week's event, we'll focus on -- and explore in movement -- how swarms form.

- How does individual behavior coalesce into collective purpose?
- How does local jostling transition into group cohesion?
- What are the conditions that allow an organized swarm to emerge from a disordered throng?
- What are the parameters and rules of engagement that allow us as individuals to come into phase with each other to form cohesive, creative community?
- How do our cells balance their engagement in their own metabolic activities with their attention and responsiveness to their local environment and neighbors?

**May 19, 2016**

@ The Breathing Project  
with Sarah Barnaby & Amy Matthews

**Cellular Swarms: Skin & Touch**

Bees swarm, fish swim in schools, and starlings gather in murmurations. We also find swarms in our inner environment, where communities of cells hum, buzz and move in relationship with each other.

Join us for **Geek Night** as we continue our inquiry into human and cellular manifestations of swarming. In this week's event, we'll consider our skin as communities of cells that swarm as part of the embryological development and ongoing maintenance of our limiting layers. We'll engage our skin to explore qualities of touch -- cellular, sponging and swarming -- from a Body-Mind Centering® perspective.

**June 16, 2016**

@ The Breathing Project  
with Sarah Barnaby & Amy Matthews

**Cellular Swarms: Lateral Line Schooling**

Bees swarm, fish swim in schools, and starlings gather in murmurations. We also find swarms in our inner environment, where communities of cells hum, buzz and move in relationship with each other.

Join us for this season's final **Geek Night** as we wrap up our exploration of human and cellular manifestations of swarming. In this event, we'll play with moving as a human swarm inspired by the schooling behavior of fish. In vertebrate fish, the lateral line system of sense organs plays an important role in orientation and schooling. Fish detect movement and mechanical changes in the water through their lateral line. While we as humans (apparently) don't have lateral line organs, we do have the ability to sense the space, objects and movement around us. We'll explore how we as individuals might tune in to this sense so that we may coalesce into collective, swarming movement.

**October 6, 2016**

@ The Breathing Project  
*with Sarah Barnaby & Amy Matthews*

**Swarming: Local Coherence in Limb Bud Embryology**

As a limb develops, cellular swarms communicate locally, along the length of the limb, and with the organism as a whole. This layered interaction is informed by gradients and local forces, and supports the coherence of the limb.

Come discuss and explore how our limbs develop from a "swarming" perspective and what that has to do with the current manifestation of ourselves!

**November 17, 2016**

@ The Breathing Project  
*with Sarah Barnaby & Amy Matthews*

**Swarming: Finding Coherence and Community at the Edge of Chaos**

An organism's coherence emerges from the swarming of its cells. Each cell is individual, continually changing and deeply interdependent - this fantastically dynamic community needs to be at the edge of chaos to thrive.

Come discuss and explore how the concept of swarming can help us acknowledge, accept and embrace how we come into being through relationship with others and our environment.

**January 26, 2017**

@ The Breathing Project  
*with Sarah Barnaby & Amy Matthews*

**The Embryological is Political: Mutual Induction in Limb Bud Development**

As embryos, our upper and lower limbs bud and develop out of an amazing dialog between two primordial cellular communities - surface ectoderm (skin) and mesenchyme (connective tissue) cells. This self-creating (autopoietic) process of growing a limb involves proliferation (multiplying of cells) and differentiation (cell specialization) within each of these tissue communities -- and this process is dependent on the mutual signaling between the two communities as well as their responsiveness to their environment.

Join us for an exploration of our earliest beginnings as a model of cooperation, community and diversity -- and a consideration of how that relates to how we are in the world together. This event will include discussion and movement explorations. No movement experience or previous knowledge of embryology is required.

**March 9, 2017**

@ The Breathing Project  
*with Sarah Barnaby & Amy Matthews*

**Embryological Episodes: A Matter of Space and Time**

In this next installment of **Geek Night**, we'll continue our exploration of generative, bi-directional interactions between our earliest cellular communities. Our first cells grow, proliferate (multiply and divide) and differentiate (specialize) in response to signals from neighboring cells and the local environment. These cells must be in a state of readiness

to receive and respond to the signals in terms of timing and position in order for development to progress.

Join us for an exploration of our earliest beginnings as a model of cooperation, community and diversity -- and a consideration of how that relates to how we are in the world together. This event will include discussion and movement explorations. No movement experience or previous knowledge of embryology is required.

### **May 11, 2017**

@ The Breathing Project

*with Sarah Barnaby & Amy Matthews*

#### **Transitioning: Role-Playing & Shape-Shifting**

In this next installment of **Geek Night**, we'll explore embryological moments and situations where cells change their shape and behavior. In response to signals from neighboring cells and the local environment, cells transition from being fairly stationary lining (epithelial) cells to become migrating inner (mesenchymal) cells. They also transition the other way, from mesenchymal to epithelial. In the swarming cellular dance which gives rise to each of us as a fully-formed organism, our cells shift between holding space, playing the role of container, and being the contents.

The embryological process of cell growth and differentiation is often described in terms of cells following a particular lineage and having their "fates" determined by their ancestry. It's not so simple or linear: fluidity and relationship are critical, functional aspects of our autopoiesis, our self-creation.

Join us to explore these ideas -- and to consider how they relate to how we're in the world together. This event will include discussion and movement explorations. No movement experience or previous knowledge of embryology is required.

### **June 15, 2017**

@ The Breathing Project

*with Sarah Barnaby & Amy Matthews*

#### **A Gathering Around Swarming**

In this last **Geek Night** of the season (and at The Breathing Project), we'll gather our ideas and questions about cellular swarming, a theme that has threaded through this past season's Geek Nights. We'll revisit and review past ideas, concepts and embryological moments to see where there's clarity and where we have questions. Topics up for discussion (and definition) include swarming, coherence, emergence and edge of chaos. We'll explore the relationship between individuality and interdependency that plays out in our layered cellular communities -- and see where as a group we might arrive at more clarity and coherence (which may not include agreement).

Join us to explore these ideas -- and to consider how they relate to how we're in the world together. Attendance at previous Geek Nights is not required.

### **September 13, 2017**

@ Babies Project

*with Sarah Barnaby & Amy Matthews*

## **Swarming & Fractal Systems**

Sarah and Amy will continue their ongoing exploration of swarming and fractal systems in this week's **Geek Night**. Join us to consider and discuss agency, participation and responsiveness.

**October 18, 2017**

@ Babies Project  
*with Sarah Barnaby*

### **A Cellular Bestiary: Phagocytes: Monocytes, Neutrocytes & Macrophages**

Join Sarah for an exploration into our phagocytic cells. Phagocytes -- literally cells that eat or devour -- specialize in detecting, surrounding, engulfing and ingesting cellular debris, foreign particles and bacteria. They have relatively short lives -- "born" in our blood marrow, traveling throughout our body via our blood, and migrating into other tissues if and when they're called upon.

While these cells are considered part of our immune and circulatory systems, we'll approach them from the "bottom up," looking at the life and activities at the cell level without the "frame" of a top-down, systems-based view.

- What are these cells like, what do they do and how do they know how to do what they do?
- How do these cells communicate and interact with each other and their environment?
- What's the life cycle of these cells? How and when did they arise in evolutionary history?

**November 15, 2017**

@ Babies Project  
*with Sarah Barnaby*

### **A Cellular Bestiary: More About Macrophages**

Join Sarah for a continued exploration into our phagocytic cells. We'll pick up from our last event and focus in on macrophages, a type of phagocyte whose name means "big eater."

Phagocytes -- literally cells that eat or devour -- specialize in detecting, surrounding, engulfing and ingesting cellular debris, foreign particles and bacteria. They have relatively short lives -- "born" in our blood marrow, traveling throughout our body via our blood, and migrating into other tissues if and when they're called upon.

While these cells are considered part of our immune and circulatory systems, we'll approach them from the "bottom up," looking at the life and activities at the cell level without the "frame" of a top-down, systems-based view.

**December 13, 2017**

@ Babies Project  
*with Sarah Barnaby*

### **A Cellular Bestiary: Molecular Motors**



In this next episode of **A Cellular Bestiary**, instead of exploring the life (and lifestyle) of a particular type of cell, we'll go "subcellular," diving into the cell to explore motor proteins and related structures.

All of our cells use "molecular motors" to transport cargo into, out of and within the cell. Motor proteins also help cells change their shape, move through space and organize their inner landscape. The contraction of our muscle cells depends on motor proteins.

Come explore and discuss how our subcellular movement patterns underlie and support our movement as a whole.

**February 22, 2018**

@ Babies Project

*with Sarah Barnaby & Amy Matthews*

### **The Value of Feedback**

Life on every scale arises from circular and relational feedback loops. Organisms are self-creating, self-defining networks that shape and are shaped by their environments.

Join Amy and Sarah for an exploration and discussion around **feedback**:

- how feedback helps shape us and keep us in relationship;
- what feedback loops are and where we find them at the cellular level on up to the scale of interpersonal interactions;
- how "positive" and "negative" feedback play out in biological systems and in human relationships.

**March 1, 2018**

@ Babies Project

*with Sarah Barnaby*

### **A Cellular Bestiary: Molecular Motors, part 2**

In this episode of **A Cellular Bestiary**, we'll continue our exploration of subcellular motor and filament proteins by taking a closer look at myosin and actin, which are familiar to many as the thick and thin filaments in the sarcomeres of our skeletal muscle. We'll focus on several developmentally earlier roles (from an evolutionary perspective) that myosin and actin play in cellular shape change, polarity, migration, and cell-to-cell attachments.

Come explore and discuss how our intracellular movement patterns underlie and support our movement as a whole.

**May 17, 2018**

@ Babies Project

*with Sarah Barnaby*

### **A Cellular Bestiary: Molecular Motors, part 3**

In this episode of **A Cellular Bestiary**, we'll continue (and conclude) our exploration of subcellular motor and filament proteins, specifically myosin and actin.

We'll focus on the role of myosin and actin in cellular contractions that happen below our conscious awareness: the smooth muscle cells in our organs and blood vessels, the

tiny muscles that give us goosebumps, and myofibroblasts that enable connective tissue to contract. We'll look at how what happens inside these cells connects to and communicates with the extracellular environment.

Come explore and discuss how our cellular movement patterns underlie and support our movement as a whole.

**May 24, 2018**

@ Babies Project

*with Sarah Barnaby & Amy Matthews*

**Swarming with Babies: Iteration, Feedback and Co-Evolution**

Each cell – and each self – has an emergent coherence that is dynamic and delocalized. Life on every scale arises from circular and relational feedback loops.

Organisms are self-creating, self-defining networks that shape and are shaped by their environments. A sense of self allows an organism to relate to, interface with and co-evolve with other selves and the world.

Each of these ideas draws from swarming, fractal systems and complexity theory, and they all have implications for working with and being with babies and their caregivers. Come discuss and explore.

**September 26, 2018**

@ Babies Project

*with Sarah Barnaby & Amy Matthews*

**The Uses & Limits of Maps & Models**

A new season of BP Members events starts next week! In this episode of Geek Night, we'll consider and discuss some of the maps and models that are prevalent in the study of embryology, infant development, biology and evolution.

- How are maps useful in helping us organize our learning and understanding?
- What limits have we inadvertently taken on by adopting a model and the perspective it embodies?
- What meaning do we make when something doesn't fit the model?
- What meaning do we give to the map itself?
- Can we acknowledge our biases and recognize the maps we use as a way of navigating the uses and limits of maps and models?

*Never trust anyone who claims to be objective.  
The ideal is not to be unbiased, but to be biased with integrity.*

- Paul Ingraham

**October 24, 2018**

@ Babies Project

*with Sarah Barnaby & Amy Matthews*

**The Uses & Limits of Maps & Models, Part 2**

In this episode of Geek Night, we'll explore several moments in our embryological development, starting with the stories that are told about them based on the standard

maps. We'll then look beyond (or underneath) the maps to uncover other ways the stories might be told.

**January 23, 2019**

@ Babies Project  
*with Sarah Barnaby & Amy Matthews*

**Glial Cells**

In this event, we'll explore the anatomy, physiology and movement of oligodendrocytes and Schwann cells, two types of glial cells that provide support and insulation for neurons. While neurons are often considered the stars of the nervous system, glial cells play a critical role.

**March 12, 2019**

@ Babies Project  
*with Sarah Barnaby*

**Motor & Sensory Neurons**

Interested in how the sensing and motoring aspects of our nervous system develop in relationship to each other, and how they continue to communicate as we learn to move and explore the world?

Join us for our next episode of **Geek Night**, where we'll explore the embryological development and differentiation of our peripheral, somatic nervous system.

**April 9, 2019**

@ Babies Project  
*with Sarah Barnaby*

**Motor & Sensory Neurons, part 2**

The sensing and motoring aspects of our nervous system develop in relationship to each other, and they continue to communicate as we learn to move and explore the world.

Join us for our next episode of **Geek Night**, where we'll further explore the embryological development and differentiation of our peripheral, somatic nervous system.

**September 17, 2019**

@ Babies Project  
*with Sarah Barnaby & Amy Matthews*

**A Conversation About Collaboration**

In our first **Geek Night** of the new season, we'll take up the topic of collaboration, which at its most basic (and etymologically), means working together.

- What are the elements of a generative collaboration, where each participant contributes and grows, and the outcome is greater than the sum of the parts?
- Can we find inspiration from looking at how our cells collaborate with each other?
- Can we find support for improving our collaborations in principles of fractal systems that we've previously explored, including agency, participation and interdependence?

**October 15, 2019**

@ Babies Project

with Sarah Barnaby & Amy Matthews

**Agents, The Intentional Stance, Cells & Babies**

“The intentional stance,” a term coined by philosopher Daniel Dennett, is a tool for predicting the behavior of semi-autonomous, interactive agents.

This simple theory of intentional systems is a theory about how and why we are able to make sense of the behaviors of so many complicated things by considering them to be *agents*. It is *not* directly a theory of the internal mechanisms that somehow achieve the rational guidance thereby predicted. The intentional stance gives you the “specs,” the job description, of an intentional system -- what it should discriminate, remember, and do, for instance – and leaves the implementation of those specs to the engineers (or evolution and development, in the case of an intentional system that is an organism.)

— Daniel Dennett, *Intuition Pumps, and Other Tools for Thinking*, p. 84

The intentional stance can be applied to vending machines, computer systems, proteins, and living organisms. How does an intentional stance help us predict the behavior of agents such as cells and babies? How might it get in the way of our understanding?

Join us as Sarah and Amy lay out the context and related questions.