

Welcome The Faraday Institute is an interdisciplinary based at St Edmund's... Confferences, Lectures, Media.

What's on? Faraday Did Science 6 October Prof Find Faraday Science



Guest Post: God, Bubbles and the Origin of Life

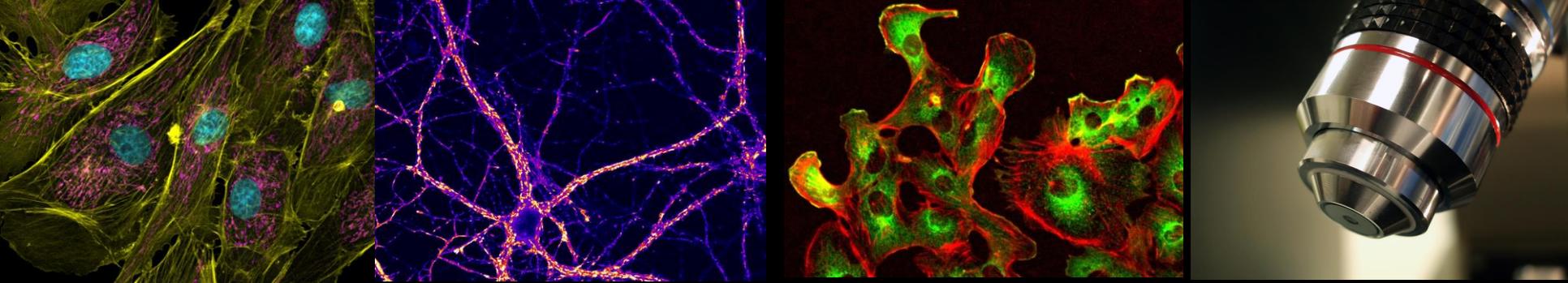
February 9, 2017 jonafofoster



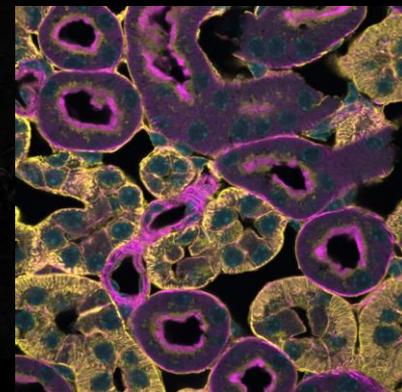
EXPLORING THE POSITIVE INTERACTIONS BETWEEN SCIENCE & FAITH

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# Wonders of the Living World: Biology & Belief



Dr Ruth M. Bancewicz

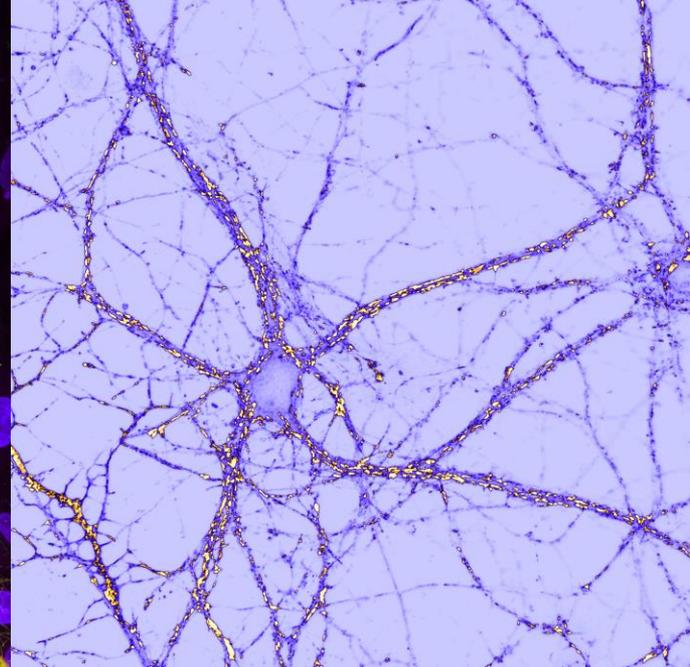
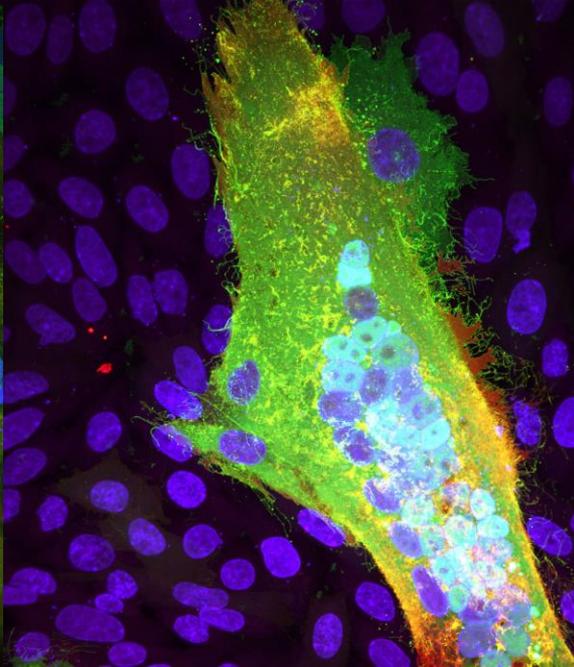
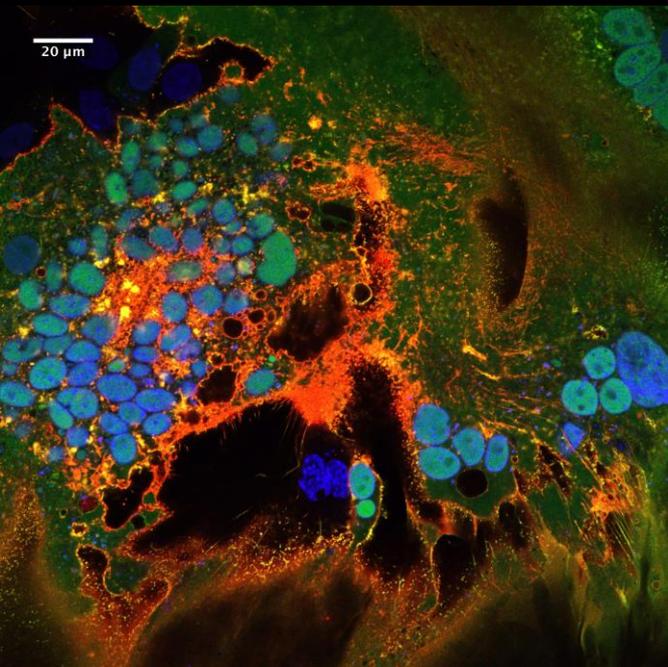
The Faraday Institute for Science & Religion



# Outline

- Can faith enhance science?
- Can science enhance faith?
- Wonder in biology – 2 case studies
- Beyond science to questions about meaning & purpose
- Compatibility with existence of God

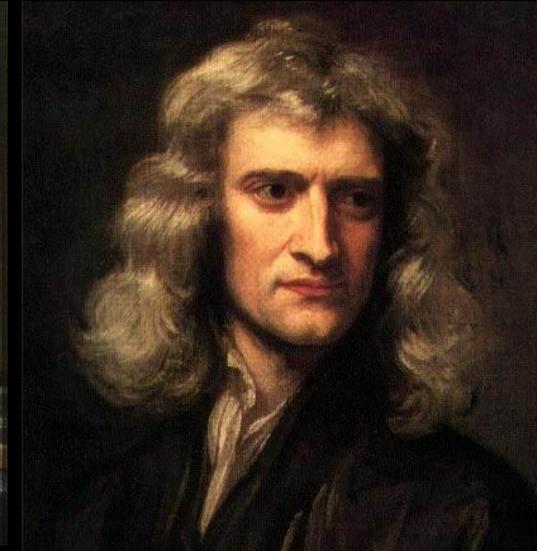
Images © McMahan Lab, LMB, Cambridge



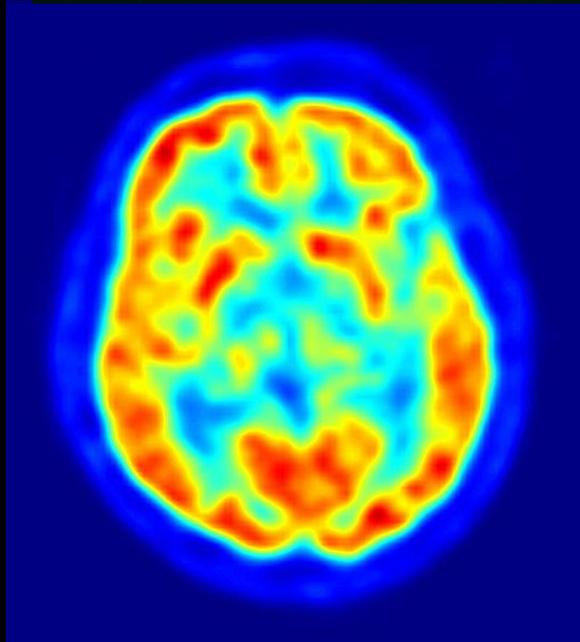


From Faith to Science

# Christians who were/are scientists



# From Theology to Science



# A Theology of Science

All creation is God's domain

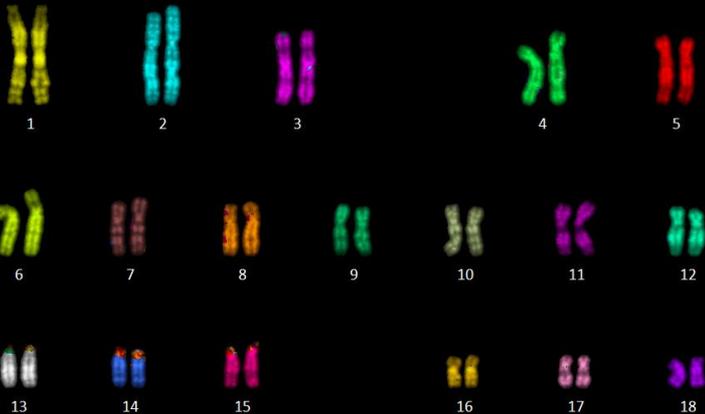
+ creation is very good (Genesis 1)

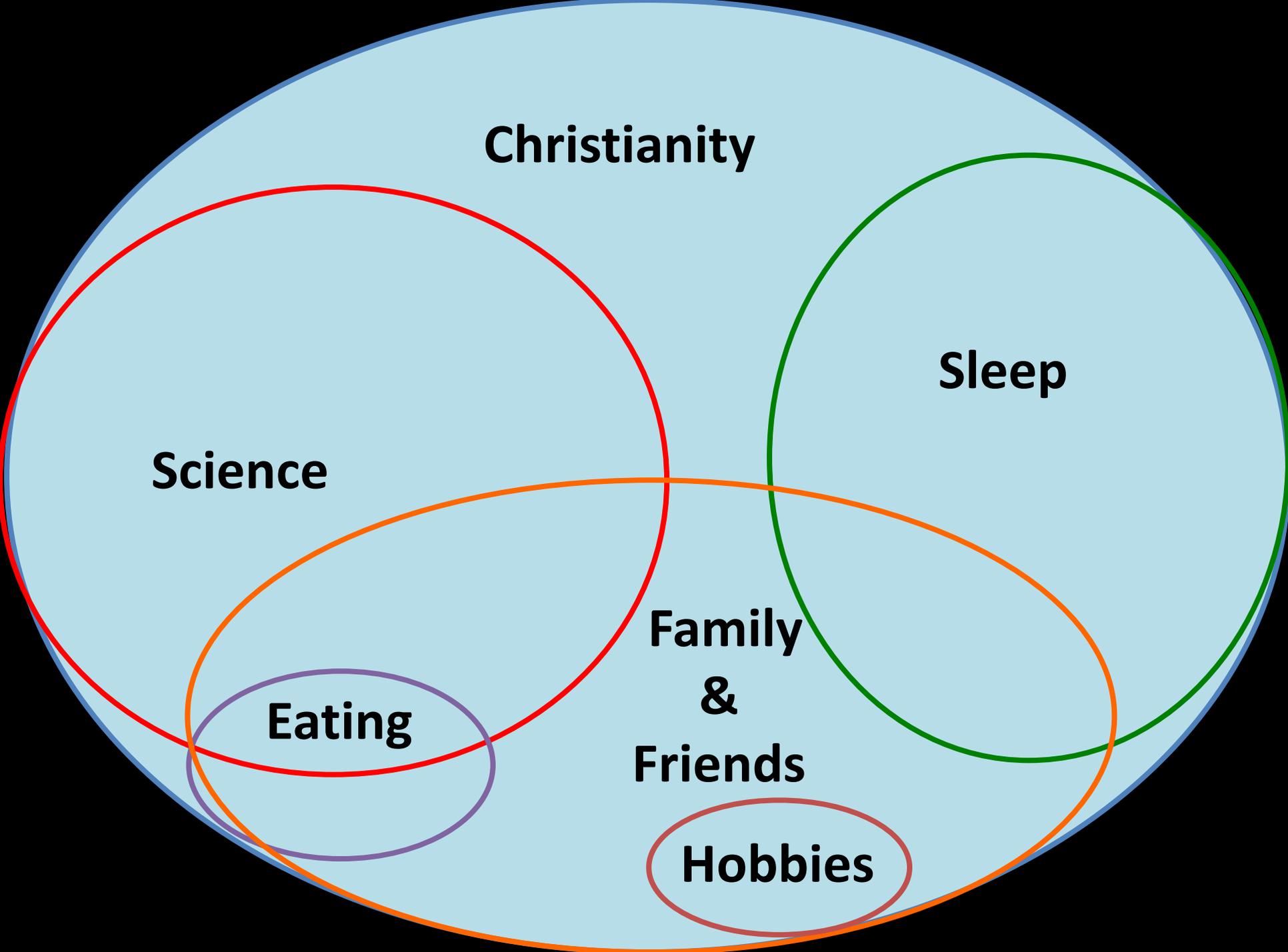
+ humankind to 'serve & preserve' it (Genesis 2)

= Science is a form of worship

*"the book of nature, which we have to read, is written by the finger of God"*

*Michael Faraday*





**Christianity**

**Science**

**Sleep**

**Family  
&  
Friends**

**Eating**

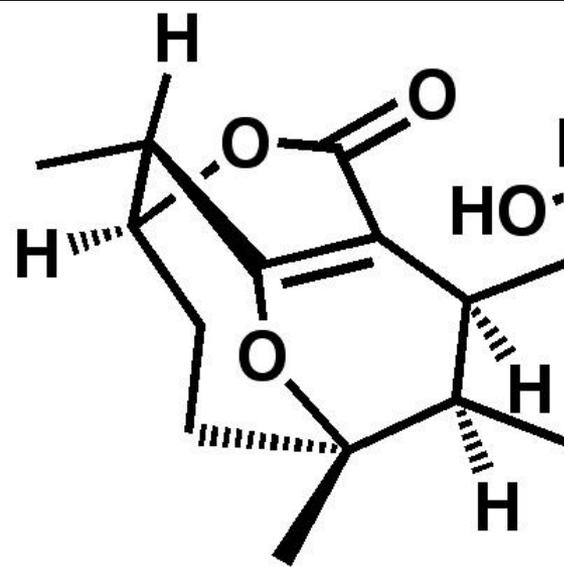
**Hobbies**

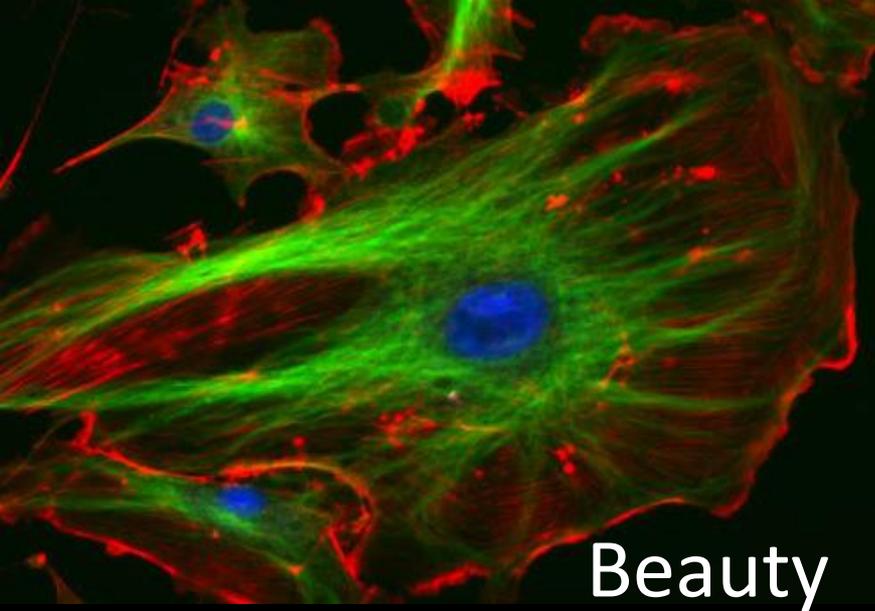


From Science to Faith

# A Theology of Nature

- Theology as a lens
- Not proof/evidence for God
- Science consistent with belief in a loving, purposeful creator

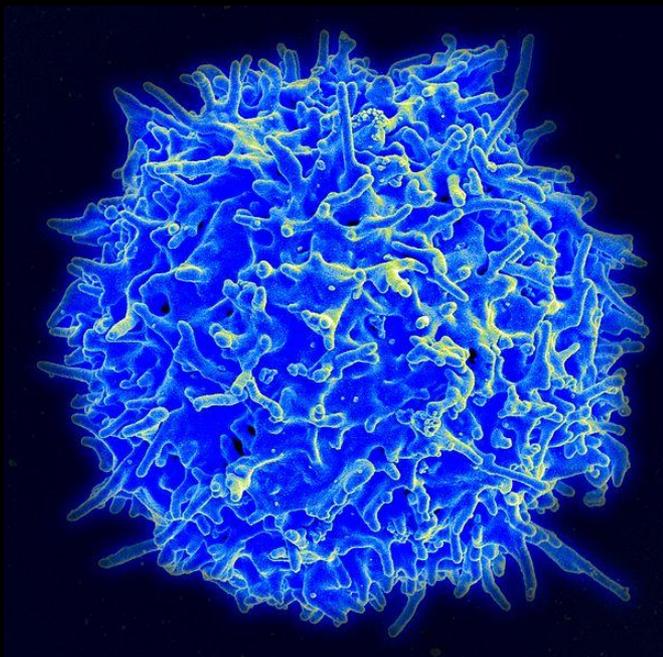




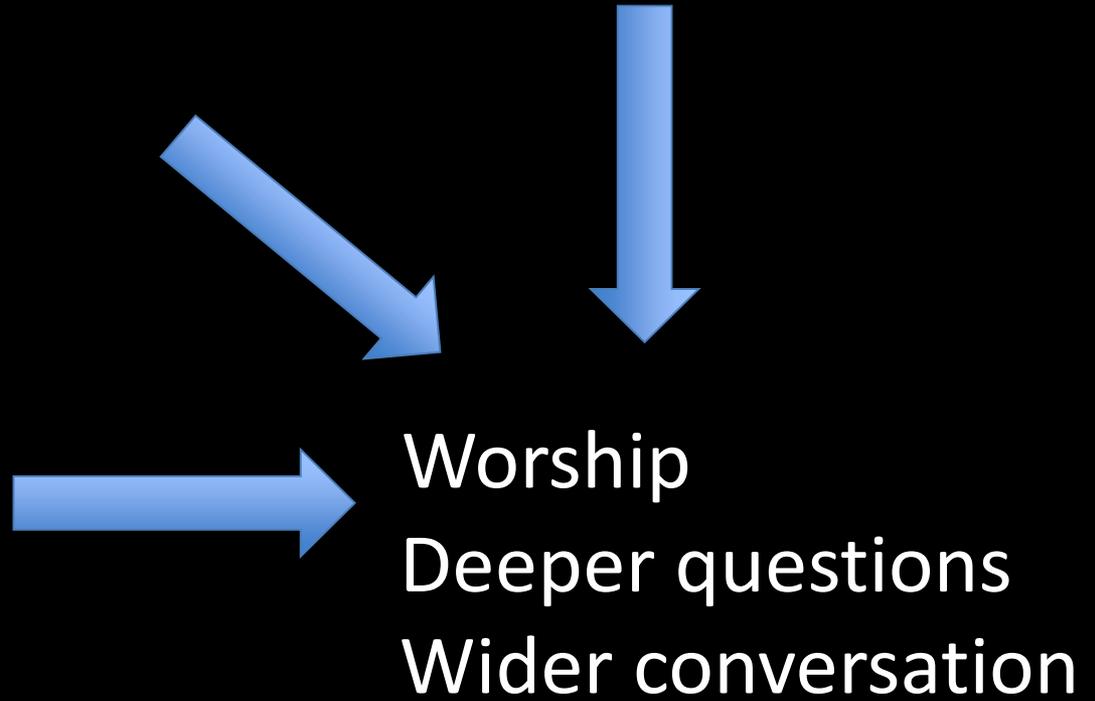
Beauty



Wonder



Awe



Worship  
Deeper questions  
Wider conversation

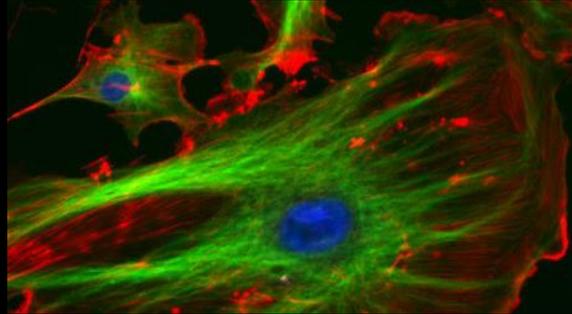
# My own view

- Faith makes sense of science
- Building bridges/starting new dialogues
- Big questions (other people deal with them)
- Reasons for faith - Jesus & his followers





Wonders of the Living World

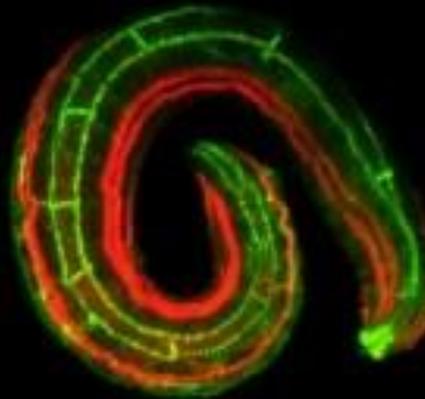
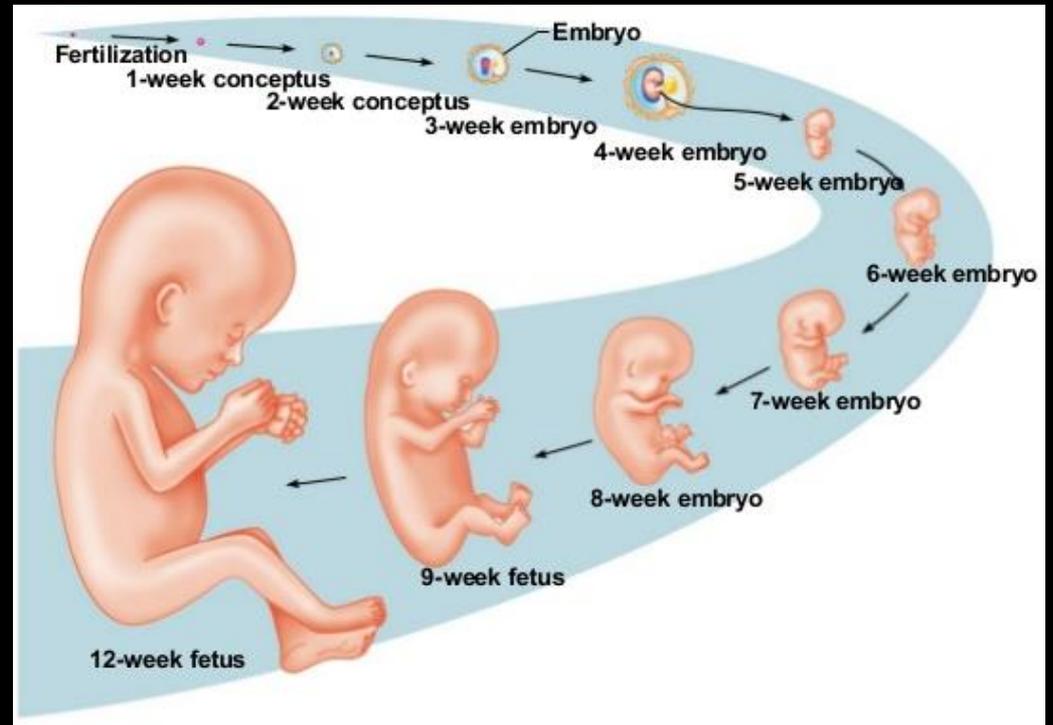


Deeper wonder. Meaning & purpose. Theology.





Humble beginnings



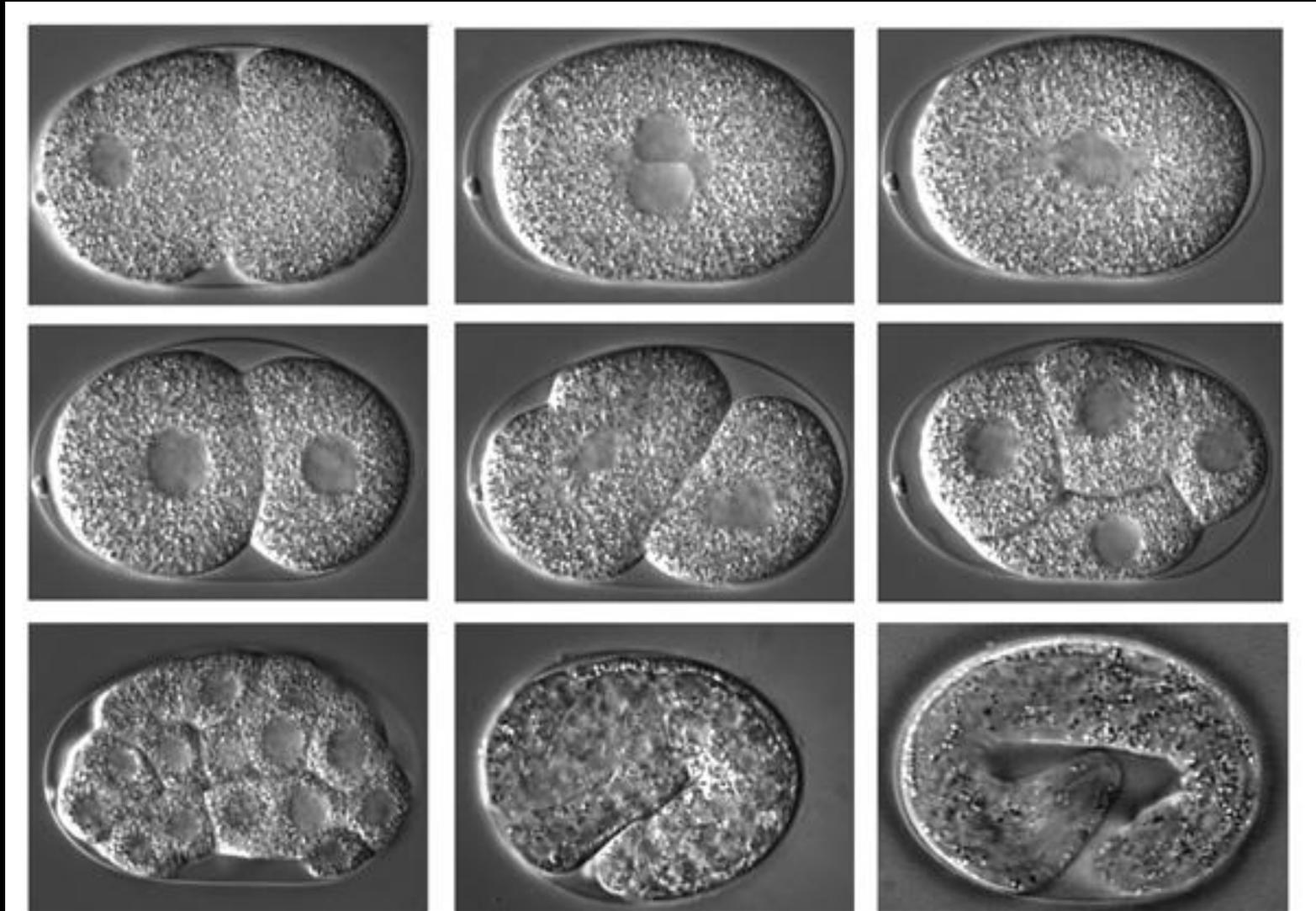
Prof Jeff Hardin  
University of Wisconsin-Madison

# Video 1 (removed) synopsis:

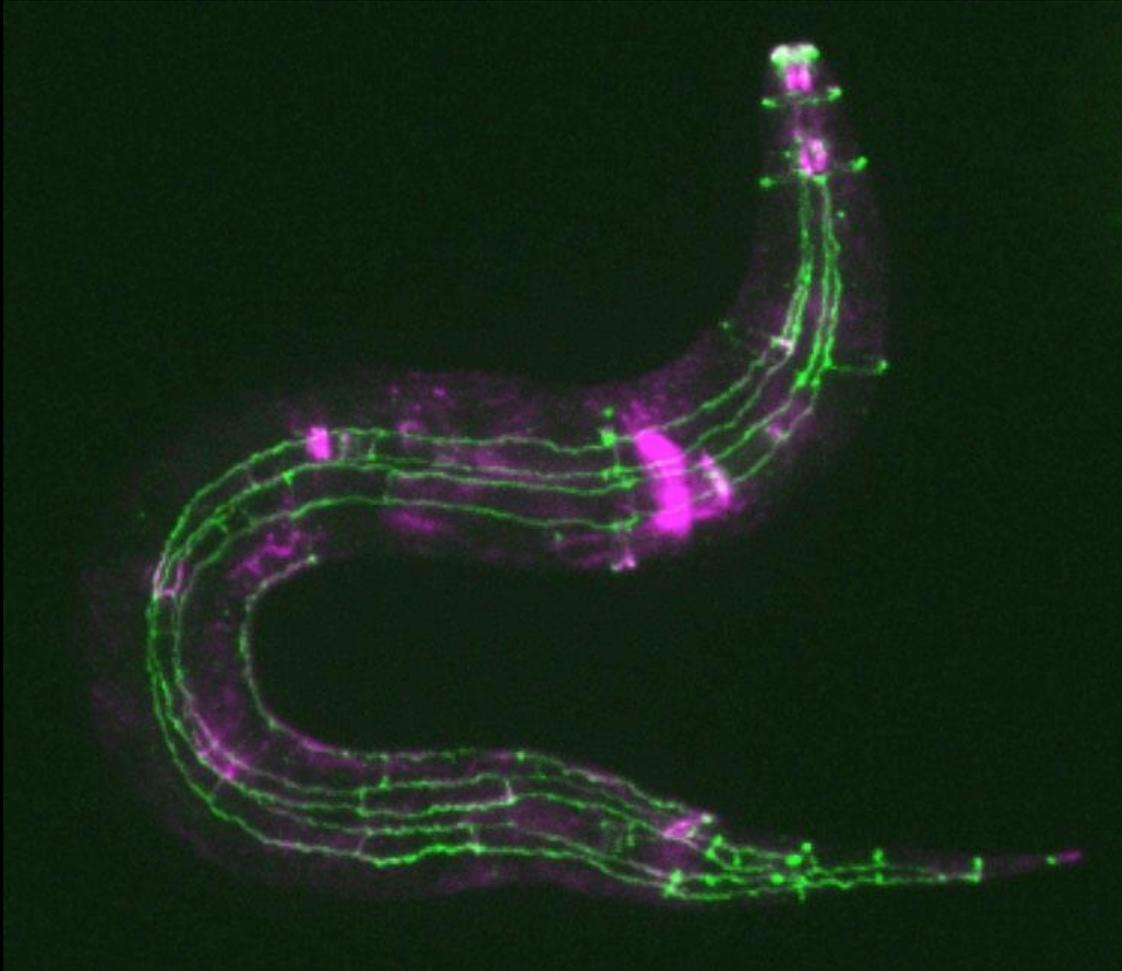
- Jeff is interested in how embryos develop.
- Cells have a series of “dance moves”.
- Jeff studies worm embryos as can then experiment a lot more.
- Dance moves are complicated.
- Cells have to stick together and then stop sticking. This is crucial for building an embryo.
- This research on worms tells us how all embryos form, including human ones.



Sea urchin embryo

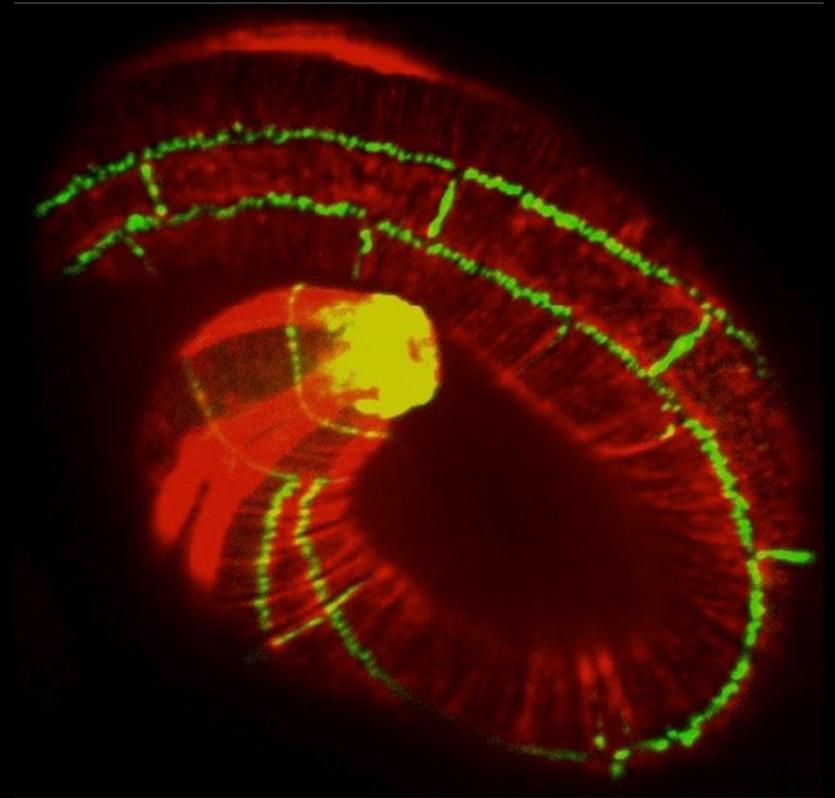


*C. elegans* worm embryo

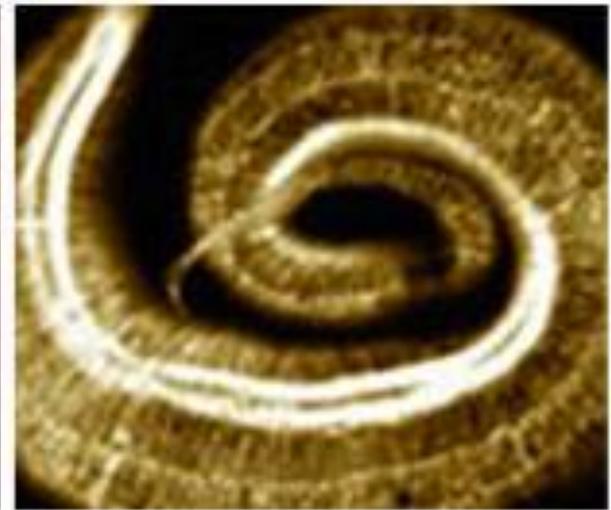
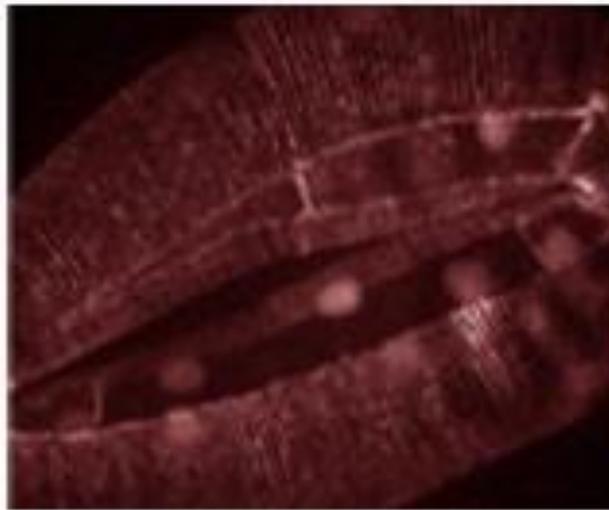
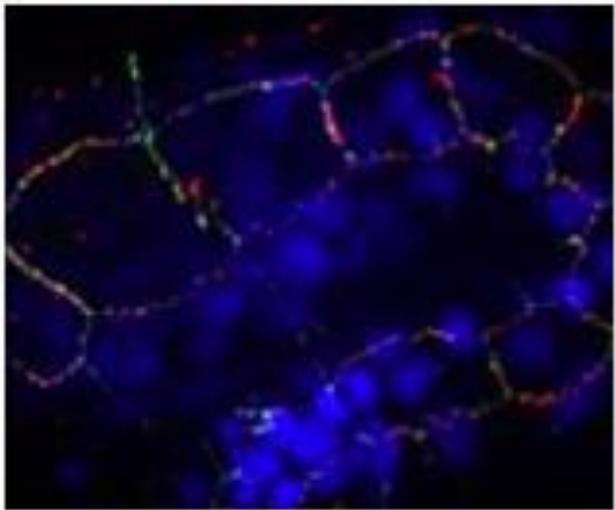
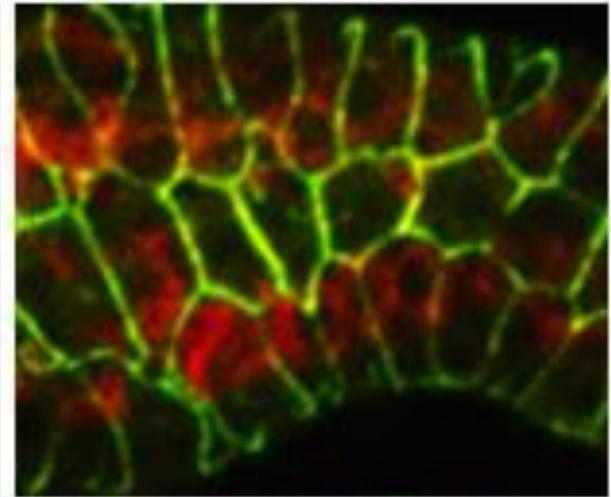
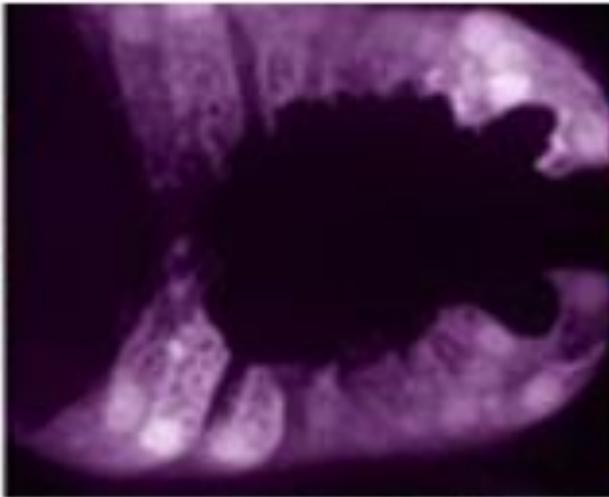
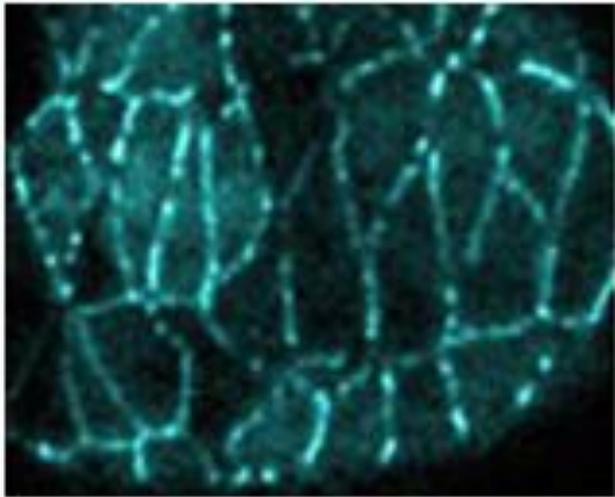


*C. Elegans* – visualising different kinds of cells

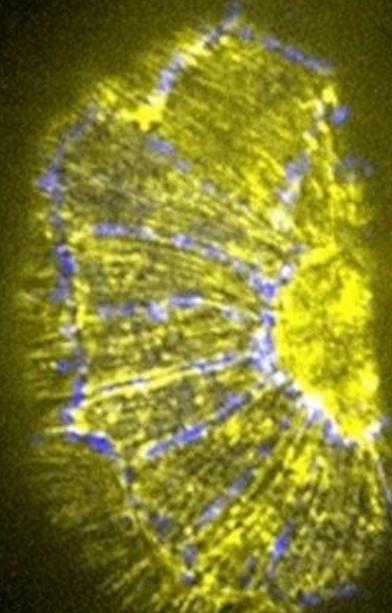
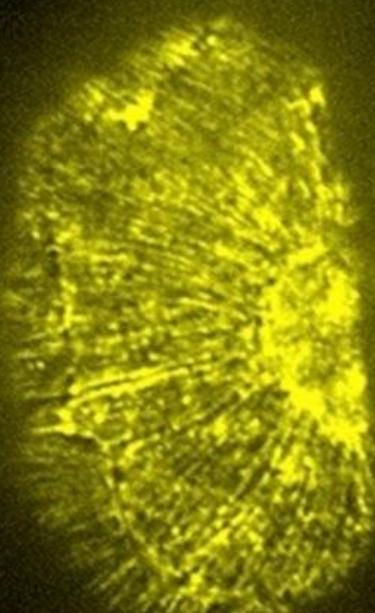
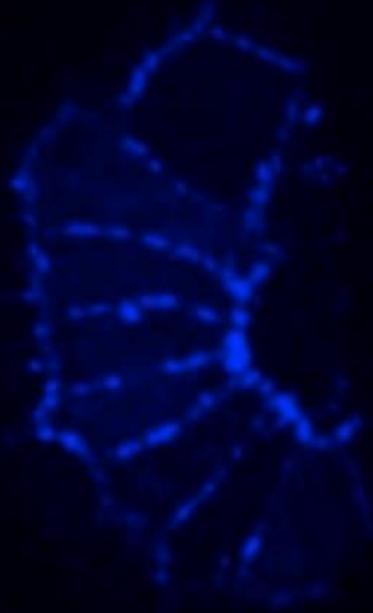




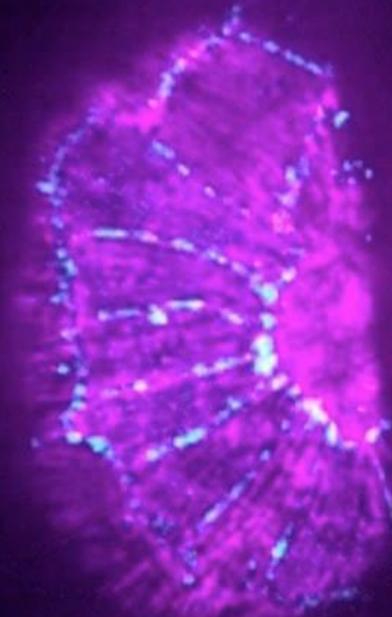
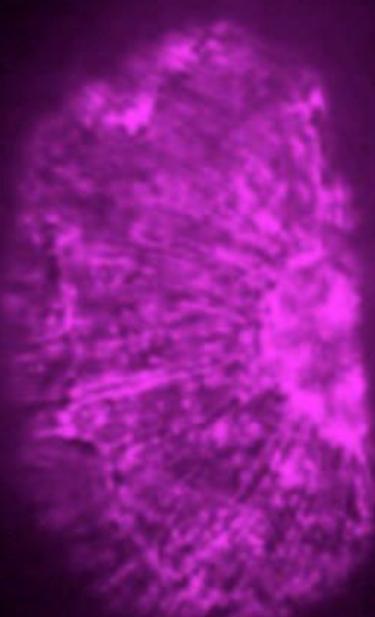
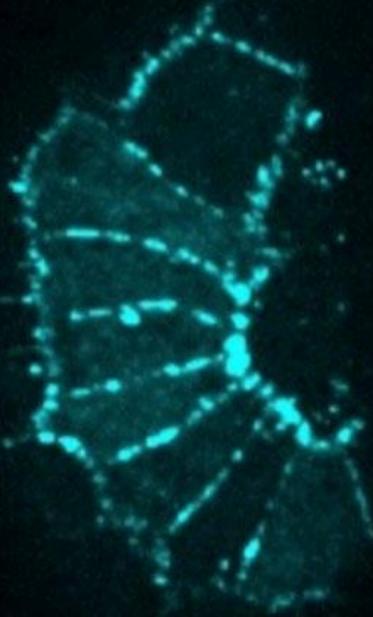
*C. Elegans* – 959 cells



*C. Elegans* – cells sticking together



*C. Elegans* a la Andy Warhol



# Video 2 (removed) synopsis:

## Beauty

- When we see the world is beautiful, this is a pointer to God.
- Embryo images they generate are as beautiful as a stained glass window.
- What is the source of this beauty? "Patches of God-light" (C S Lewis).
- The pictures that go into text books cause Jeff to stop, and pause in wonder and awe at the God behind all this beauty.

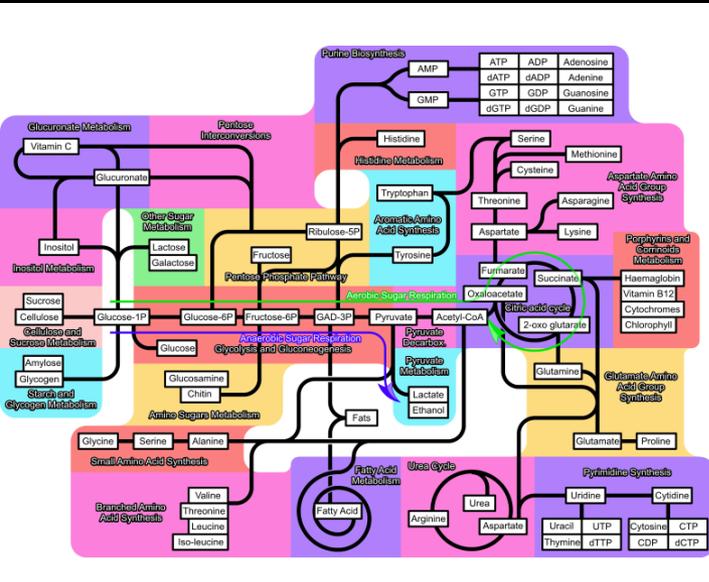
# 1. The beauty of world reflects the beauty of God



*“For the glory of God the world was created” “...only the person who is touched by a ray of this glory... can learn to see the presence of [God] in Jesus Christ.”*

Hans Urs von Balthasar

## 2. Order & interconnectedness: God's power, wisdom & goodness



*“Each creature manifests God in some way, but the best manifestation of God is the beautifully ordered universe of all creatures functioning in relation to one another as God intended.”*

Thomas Aquinas

### 3. A God who creates order out of chaos



# Video 3 (removed) synopsis:

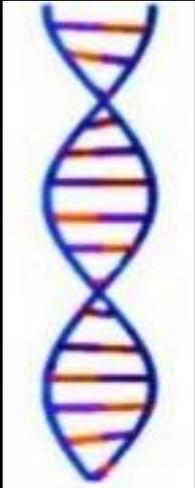
## Beauty, contd.

- Goals of initial undergrad course is to get across "embryos are cool"
- Psalm 139 - writer reflects on when he was an embryo. He didn't really understand, but he says he is "fearfully and wonderfully made".
- Jeff gets to study these things in a way that no-one before understood them.
- This is exciting and flows in profound ways out of his own Christian faith.



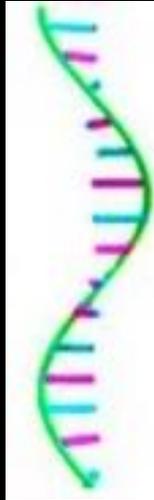
Inevitable life?

**Plans**  
(DNA code)



→  
copied

**Message**  
(RNA code)



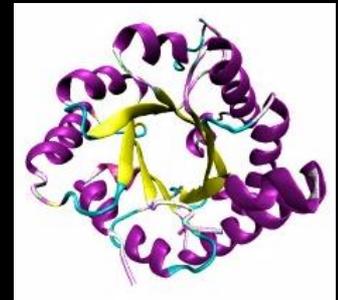
→  
translated

**Building blocks**  
(amino acids)



→  
folded

**Machine**  
(protein)



# Video 4 (removed) synopsis:

Prof Stephen Freeland, Astrobiologist  
University of Maryland/NASA

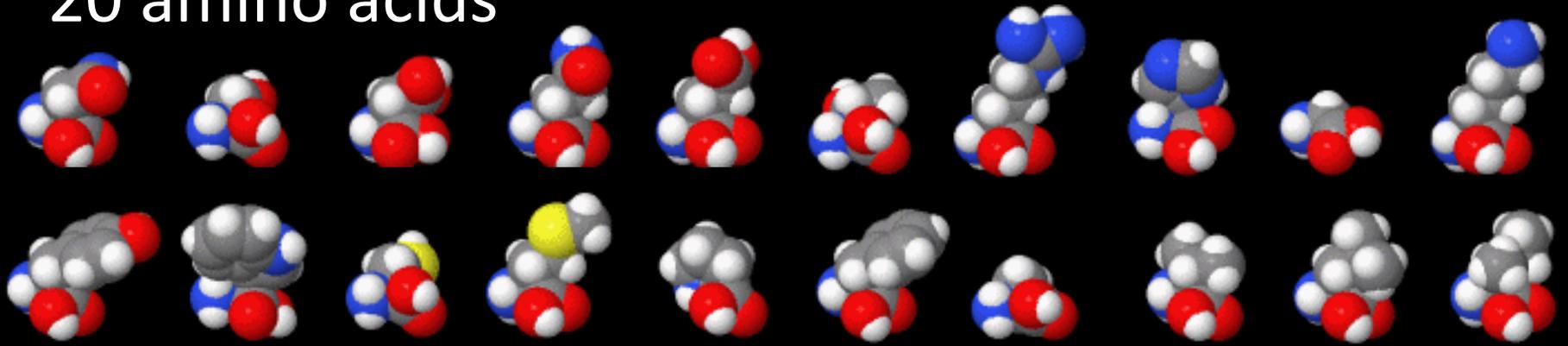
- Evolutionary biologist fascinated with process of evolution and its outcomes.
- Those outcomes fascinate Stephen
- Research focused on events that happened very early.
- Remarkable how similar all life is.
- Life on our planet made decisions which it's stuck with ever since.
- Central Dogma of molecular biology named in 1960s - simple set of rules that defines all life.
- Life from bacteria and us all follow the same process  
dna->rna->proteins->metabolism->dna

# Building blocks (amino acids)

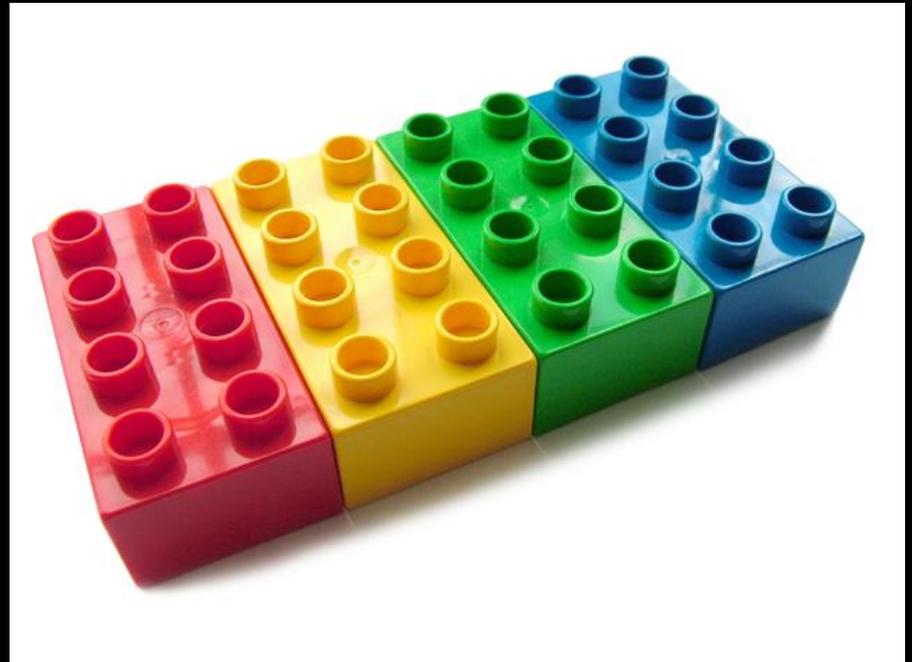


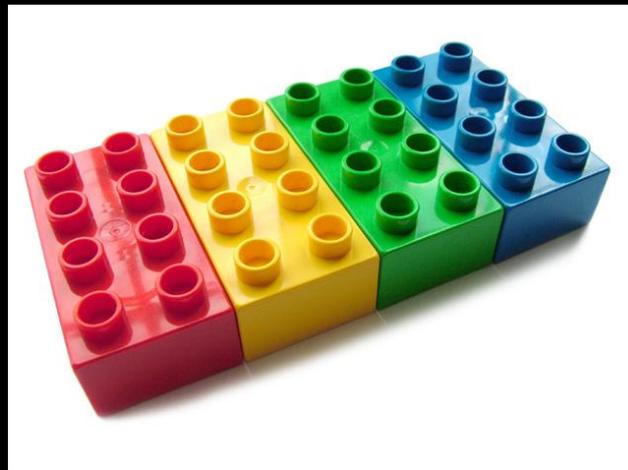
Hundreds of types, only 20 used

# 20 amino acids



Q. Why these 20?





### **Data:**

Hundreds  
of amino  
acids

### **Hypothesis:**

Other sets  
of amino  
acids could  
be as good  
as ours

### **Calculation:**

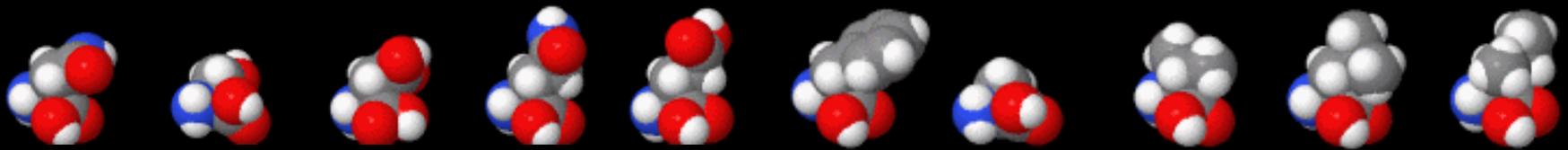
How many  
random sets of 20  
have a better  
range of chemical  
properties than  
ours?

### **Result:**

100,000,000  
sets  
3 chemical  
properties  
6 sets better



● carbon      ● oxygen  
● hydrogen    ● nitrogen

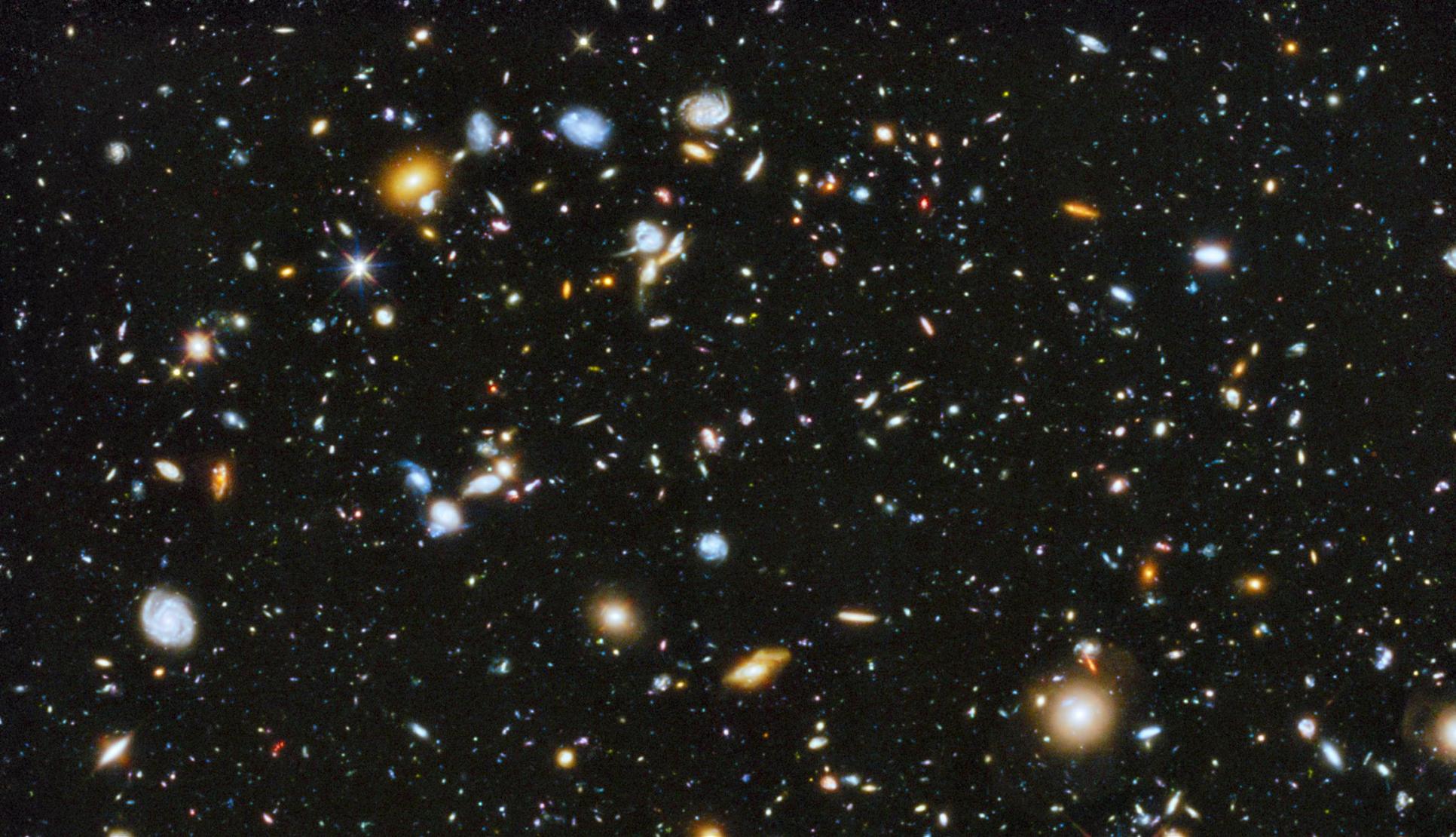


Hundreds of amino acids



20 selected

- Predictable properties
- Similar code elsewhere?

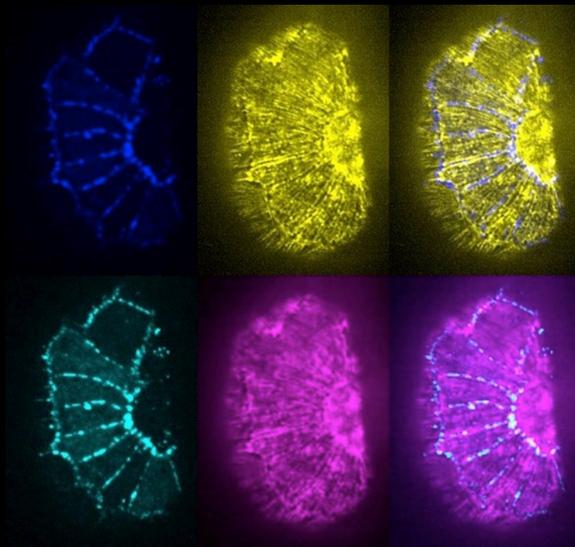


Philosophy/theology: Special, inevitable, or both?  
The data cannot tell us

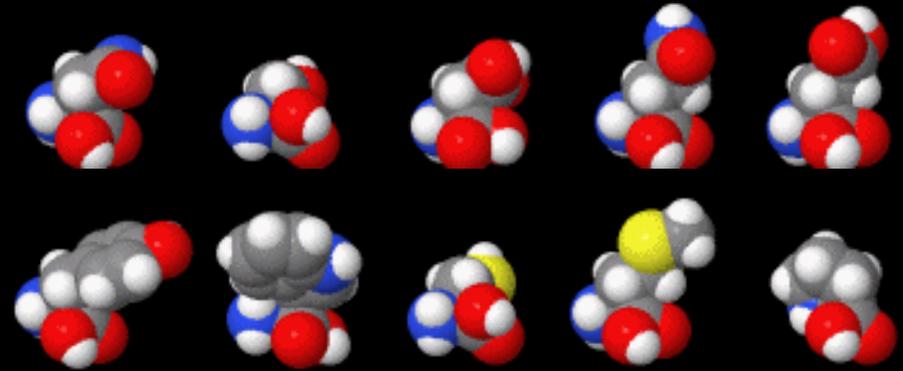
# Video 5 (removed) synopsis:

## A life-friendly universe

- Heavy subtext about inevitability in evolution which brings us close to meaning and purpose.
- Late 20th century point of view is that we are an unlikely accident of chemistry but 21st century science does not support that view. Universe is life-friendly.
- Life we know has been here for 1/3 of the life of the universe - that's interesting.
- Apparently wherever the conditions are right, life is likely to emerge.
- This redefines our sense of place. But we'll need to go beyond science to make statements of meaning & purpose - to rational philosophy, politics, faith.



Beauty



Inevitable life

What questions about meaning or purpose does this make you ask?

How do you make sense of science?

[scienceandbelief.org](http://scienceandbelief.org)



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for Science and Religion



science  
+belief

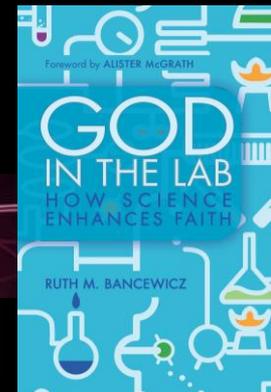


Test of FAITH

Foreword by ALISTER McGRATH

**GOD**  
IN THE LAB  
HOW SCIENCE  
ENHANCES FAITH

RUTH M. BANCEWICZ





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