

## The Mystery of Sex

Regarding sexual reproduction, American science writer Carl Zimmer has written the following:

*Sex is not only unnecessary, but it ought to be a recipe for evolutionary disaster ...It is an inefficient way to reproduce ... Animals that evolve sexual reproduction should be promptly outcompeted by nonsexual ones ... And yet sex reigns ...Why is sex a success, despite all its disadvantages?<sup>1</sup>*

The advent of sexual reproduction is probably the greatest unsolved mystery in biology. In fact, Darwinism has no credible answers for it and, in the opinion of the presenter; the phenomenon presents the greatest challenge to the theory of evolution. In the first part of this highly illustrated and entertaining presentation, we will try to answer the question “Why Sex?” This will include a brief overview of asexual and sexual reproductive strategies in living organisms. In the second part of the talk, we will try to answer the question “How Sex?” Here we will focus on the issue of male and female. Without doubt, this is the crux of the matter since successful sexual reproduction requires perfect compatibility between male and female counterparts. It is not the survival of the fittest; it is the survival of the fertile.

**Geoff Barnard** is the author of over 100 academic papers and articles. He has a PhD in Biochemistry from the University of London and a MA in Theology from the University of Southampton. He was a professional biochemist for over 40 years, a Senior Lecturer in Biological Sciences at three UK Universities, and a regular visiting scientist at the Weizmann Institute of Science in Israel. His last academic position in the UK was as a Senior Research Scientist in the Department of Veterinary Medicine at the University of Cambridge, a position he held for over seven years. He now lives in Arad, Israel with his wife Caryl.

### I. Survey of Reproduction (Why Sex?)

#### A. Asexual Reproduction

1. Single Celled Organisms
2. Plants
3. Some Animals

#### B. Sexual Reproduction

1. Virtually all Animals
2. All Flowering Plants
3. Darwinism’s Greatest Challenge

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<sup>1</sup> Zimmer, Carl (2011) *Evolution: The Triumph of an Idea*. Cornerstone Digital; New edition

### C. Darwinian Theories

1. The Lottery Principle
2. The Tangled Bank Hypothesis
3. The Red Queen Hypothesis

***“Now, here, you see, it takes all the running you can do, to keep in the same place.”<sup>2</sup>***

4. Is there Anything New?<sup>3</sup>
5. The DNA Repair Hypothesis<sup>4</sup>

### D. The Reproductive Challenges that Darwinism Faces

1. From Asexual to Sexual
2. From External to Internal Fertilization
3. From Cold to Warm Blooded Physiology

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<sup>2</sup> Carroll, Lewis *Through the Looking-Glass and What Alice Found There*, Chapter 2

<sup>3</sup> Ursula Goodenough and Joseph Heitman *Origins of Eukaryotic Sexual Reproduction* Cold Spring Harbor Perspectives in Biology (March 2014) [<http://cshperspectives.cshlp.org/content/6/3/a016154.long>]

<sup>4</sup> Harris Bernstein, Carol Bernstein and Richard E. Michod (2011) *Meiosis as an Evolutionary Adaptation for DNA Repair* [<http://cdn.intechopen.com/pdfs-wm/23159.pdf>]

4. From Water to Land

5. What actually came First?

## II. Male and Female (How Sex?)

### A. The White Queen Hypothesis Part 1

***“Sometimes I've believed as many as six impossible things before breakfast.”<sup>5</sup>***

1. Physical Compatibility: Size really Matters!

2. Physiological Complexity

3. Biochemical Obstacles

4. Immunological Tolerance

### B. Human Reproduction

1. Sex Chromosomes

2. The Mystery of the Y Chromosome

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<sup>5</sup> Carroll, Lewis *Through the Looking-Glass and What Alice Found There*, Chapter 5

3. Embryonic Development: Vive le Différence!
  
4. The Wonder of Conception: Go to Work on an Egg!

### C. The White Queen Hypothesis Part 2

5. Environmental Factors: Sights, Sounds and Scent
  
6. Genomic Barriers: The Formation of Sperm and Egg<sup>6</sup>

## III Conclusion: The Survival of the Fertile

### ***Suggested Readings:***

Zimmer, Carl (2011) *Evolution: The Triumph of an Idea* Cornerstone Digital; Kindle edition. [[http://www.amazon.co.uk/Evolution-Triumph-Idea-Carl-Zimmer-ebook/dp/B00667J0BQ/ref=sr\\_1\\_1?s=books&ie=UTF8&qid=1394696870&sr=1-1&keywords=Evolution%3A+The+Triumph+of+an+Idea](http://www.amazon.co.uk/Evolution-Triumph-Idea-Carl-Zimmer-ebook/dp/B00667J0BQ/ref=sr_1_1?s=books&ie=UTF8&qid=1394696870&sr=1-1&keywords=Evolution%3A+The+Triumph+of+an+Idea)]

Stove, David (2009) *Darwinian Fairytales: Selfish Genes, Errors of Heredity and Other Fables of Evolution* Encounter Books; New Ed edition [<http://www.amazon.co.uk/Darwinian-Fairytales-Selfish-Heredity-Evolution/dp/1594032009>]

### ***Additional Notes and Questions:***

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<sup>6</sup> The process of meiosis will be explained. This is the most technical part of the presentation