Corpus Callosum: The Advantages of Art and Science Superposition

Michael Welter | SPS Communications
Final Intern Symposium
August 10, 2018
Overview

Section 1: How drawing cultivated a scientist

Section 2: How physics cultivated an artist

Section 3: Combining art and science

Section 4: How superposition of art and science can influence the world
Section 1: How drawing cultivated a scientist
Art education

STEM skills taught through drawing

Coordinate systems & Precision

Geometry & Scale

Spatial Reasoning & Anatomy
Section 1:
How physics cultivated an artist
Pursuing Physics & Performing Research
Tutoring, Outreach & Communication
Section 3: Combining art and science
Science influencing Art

- Kinetic sculptures
- Architecture
- Creative mediums
Art influencing Science

Industry

Communication

Academia

Policy

Research

Non-Profit
Effective **Visuals** using Graphic Design

Basic Principles:
Effective Communication through Graphic Design

Advanced Principles:

Diffusion and Conformational Dynamics of Single DNA Molecules Crowded by Cytoskeletal Proteins
Kathryn Regan, Rachel Dotozwech, Shia Ricketts, and Rae M. Roberts-Kolbmen
Department of Physics & Biophysics, University of San Diego, San Diego, CA 92110

INTRODUCTION
DNA molecules diffuse in a very crowded environment, often constraints or obstacles within the cell influence the mobility and conformation of DNA. In this case, the crowding effects of cytoskeletal proteins can significantly affect the diffusion and conformation of DNA. The interaction between DNA and cytoskeletal proteins has been extensively studied, but the exact mechanisms involved are not yet fully understood.

FIGURE 1: Experimental validation - DNA conformational dynamics
DNA molecules were labeled with fluorescent tags and imaged using high-resolution microscopy. The images were analyzed to determine the conformational dynamics of DNA in the presence of cytoskeletal proteins.

DNA is the molecule that stores genetic information and is essential for the replication and expression of genes. The understanding of DNA conformational dynamics is crucial for various biological processes, including gene regulation and epigenetics.

We investigated the effects of cytoskeletal proteins on DNA conformational dynamics using a combination of in vitro experiments and computational modeling. Our results indicate that cytoskeletal proteins can induce significant changes in DNA conformation, which can affect gene expression and cellular function.
Section 4: Influencing the world
Teaching **without** misleading

**Scientists Find That Wine And Chocolate Are The Secret To Beating Wrinkles**

Mark McGowan in NEWS

Good news for those of us that like a slap of chocolate and a glass or nine of red of an evening - studies have found that they are the secret to staying youthful. No, really.
Facts: at a glance

Policy & Industry
Inspiring and Empowering

Outreach & Education

HPUniverse Day 2017
Global Influences

1. Improve general attitudes towards science
2. Promote diversity & inclusivity

Pride Month and LGBTSTEM Day
#LGBTSTEM Day
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Membership Poster

I was taught that the way of progress is neither swift nor easy.

Marie Curie

“We can judge our progress by the courage of our questions and the depth of our answers.”

Carl Sagan

We have a hunger of the mind which asks for knowledge of all around us, and the more we gain, the more is our desire; the more we see, the more we are capable of seeing.

Question everything.

Maria Mitchell
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HPU Physics Department

2018 SPS Interns
Questions?
Scientific Illustration

Brush & Beaker Designs

Helping them understand the gravity of the situation.
Thank you!