ANIL AGGRAWAL'S

Internet Journal of Book Reviews

A sister journal of AAIJFMT · Anil Aggrawal's Internet Journal of Forensic Medicine and Toxicology

VOL. 1, NO. 2 · JULY – DECEMBER 2002

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Voyage Inside the Cell

THE ITEM

Price $100.00

Editor's recommendation — this book carries the editor's "must buy" recommendation.

A FASCINATING TOUR INSIDE THE CELL

Voyage Inside the Cell *(2000)* Video Cassette, running time 14 minutes 30 seconds, Written by Christian Sardet, Laurent Larsonneur & Andreas Koch, Music composed by Philippe Valembois, Directed by Laurent Larsonneur

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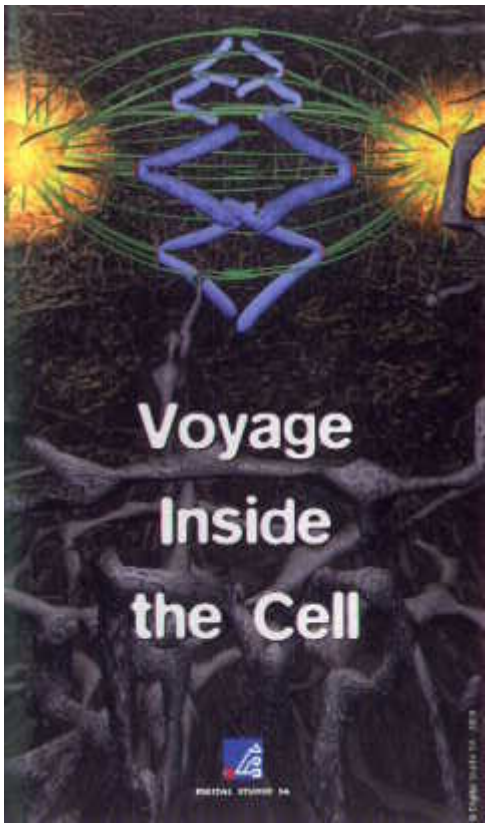
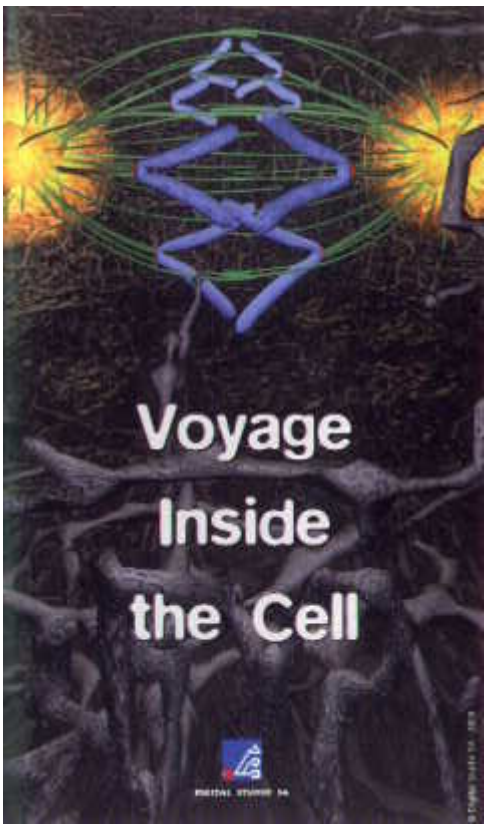


The year 1839 strikes me as a very important year in the history of science. It was this year when the French artist Daguerre developed photography (he learnt to use sodium thiosulphate to make his images permanent), the first ever astronomical photograph - a photograph of the moon - was taken successfully by the British-born American chemist John William Draper, vulcanized rubber was made (albeit accidentally) by the American inventor Charles Goodyear, the rare earth element Lanthanum was discovered by the Swedish chemist Carl Gustaf Mosander, and the bicycle was invented by a British blacksmith Kirkpatrick Macmillan. But the formulation of cell theory in this year by the German physiologist Theodor Schwann appears to me to be of maximum import. For it was this theory, which radically changed the thought of biologists. Quite rightly it is considered to have brought about the same amount of revolution in biology, as did the atomic theory in chemistry propounded by the English chemist John Dalton, 36 years earlier, in 1803.

To be sure, a German botanist Matthias Jakob Schleiden (1804-1881), had propounded the cell theory one year earlier (in 1838), but it was Schwann in 1839, who not only elaborated the ideas more clearly, but also extended this theory to animals. Today the so-called Schleiden-Schwann theory of cells is the basis of all biology. In fact this is one of the first things a student of biology learns.

Publisher's Blurb



In this film, spectacular computer-generated images transport us inside a living cell. We follow a hormone as it passes through the cell membrane, the cytoplasm, and enters the nucleus where we see the magnificent ballet of mitosis - the replication of DNA and teh separation of chromosomes to form two daughter cells. A lively narrative text and original music accompany the images.

Digital Studio, based in Paris, France, Specializes in developing multimedia products and computer animated films for private enterprise, institutions, science centers, and theme parks. Founded in 1993 by Andreas Koch and Laurent Larsonneur, co authors of this video, its products are diffused world-wide.

Christian Sardet (sardet@obs-vlfr.fr), a research director of the Center National de la Recherche Scientifique, leads a team of cell biologists at the Marine Station in Villefranche-sur-Mer, France. He is the author of several films, including *Fertilization: The Story of Sperm and Eggs* with images taken through the microscope.

Put in most basic terms, the cell theory states that all living beings - plants or animals - are composed of cells; cells which came from previous existing cells, and cells which give rise to more cells. These cells comprise of important organelles, of which nucleus is perhaps the most important. Growth and reproduction - two basic properties of life - are the properties of cells.

As a man of biology, I have always been fascinated by cells. Over last thirty years, I have peered over thousands of different types of cells down my microscope - both plants and animal. And have looked at a thousand different diagrams and photographs of cells in various books, including some of the best diagrams appearing in Gray's anatomy.

But never before did I encounter such a rare spectacle, as is presented in this video. Magnified almost a billion times, the video presents the cell as a city with lots of activity going on inside it. As

we are brought to the entrance of this city - the surface of the cell - we see the proteins rising from the cell surface like trees. Various messenger molecules are seen to glide towards them and docking on to the right proteins. The process of docking sets up a process, which leads to a flurry of activity inside the cell.

> *...I would recommend this video for every intelligent person. It doesn't matter if you are a housewife, a company executive, an astronomer, a truck driver, a chartered accountant or a student. Seeing it would introduce you to your own very basic unit - the cell...*

As we enter the cell, we see a giant caterpillar crawling forward on a tiny tube. Soon we realize that it is a mitochondria - the powerhouse of the cell - crawling along the endoplasmic reticulum. Although I have seen mitochondria several times in books, it never appeared so life like to me. Seeing it in three dimensions - and in animation - was a different experience altogether. A range of other cellular activities also become visible. It is amazing to see the vast network of tubules and other cell organelles inside the cell. One gets a feeling as if he has been transported inside a city, buzzing with activity. Endoplasmic reticulum criss-crossing the whole panoramic view appear rather like gigantic flyovers and bridges spanning the whole city. Accurate reproductions of cell organelles, with deft animations make the whole experience really breathtaking.

Finally we are taken inside the nucleus, where we are introduced to the double stranded DNA. We get to witness the replication of the DNA as well as that of the cell. The video ends with a daughter cell pinching off from its parent cell.

The fifteen minutes of this experience was one of the most unique in my life. The voice by Jodi Forrest is captivating and keeps the listener glued to the scene. We are told in the end that the video has been possible because of the support of Rhône-Poulenc Rorer Pharmaceuticals. I hope they will make more instructional videos of this sort in the future.

Whom would be video benefit most? I would recommend this video for every intelligent person. It doesn't matter if you are a housewife, a company executive, an astronomer, a truck driver, a chartered accountant or a student. Seeing this video would introduce you to your own very basic unit - the cell. Of course biology students at all levels would benefit most from this video. It could perhaps help them to better their grades too!

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-Editor-in-Chief