

# Organisms' common ancestry aids medical research, says biologist

ROME - Charles Darwin's theory that all living organisms have descended from one common biological species is a scientific fact that has tremendously aided medical research, said an evolutionary biologist attending a Vatican-sponsored conference.

A common biological ancestry is the basis upon which all scientific research is conducted, said Douglas Futuyma, a professor of ecology and evolution at the State University of New York at Stony Brook.

For example, using mice, monkeys and other nonhuman species to research diseases and possible new cures gives data that is valuable and pertinent to promoting medical advancements for humans because of the similar genetic heritage of different species, he said.

Mr. Futuyma was one of dozens of scientists, theologians and philosophers invited to speak at a conference in Rome March 3-7 marking the 150th anniversary of the publication of Charles Darwin's "Origin of Species" in which he put forth his theory on evolution.

The conference, titled "Biological Evolution: Facts and Theories," was sponsored and organized by the Pontifical Council for Culture's Science, Technology and the Ontological Quest project, the University of Notre Dame in Indiana, and several of Rome's pontifical universities.

In his talk, Mr. Futuyma said modern genetic discoveries have confirmed what Darwin and others concluded from studying and comparing the anatomy and embryos of different species - that all living organisms descend from a common ancestry.

"The common ancestry of all forms of life is a scientific fact," he said.

And this common heritage has proven to be "deeply useful" because it "provides a rationale for advancing medical research through research on other organisms," he

said.

Some of the latest research in evolutionary biology has also shown that there seems to be “a molecular clock” or a clocklike process that determines when one species will split and another branch will be added to the evolutionary tree, he said.

He said this discovery has enabled researchers to determine and track very accurately the evolution of organisms that have left behind no fossil record, like bacteria for example.

Gennaro Auletta, who teaches the philosophy of science at Rome’s Pontifical Gregorian University and heads the culture council’s project, said the aim of the five-day conference was to offer a critical appraisal of Darwin’s theories of natural selection and evolution.

Modern scientific discoveries have modified and added greater detail to Darwin’s findings, he said in an interview published March 4 in the Vatican newspaper, L’Osservatore Romano.

For example, he said, many now see that “the evolution and development of an organism is the result of a co-evolution – a co-adaptation” between the organism and its environment, which are constantly interacting with each other.

No living creature can directly control its own evolution, he said, but by creating an environmental niche, an organism responds to its physical surroundings in such a way that it can foster its own continued existence.

By creating this niche, the organism is “able to modulate the effects of natural selection on itself and therefore influence, albeit indirectly, its own evolution,” Mr. Auletta said.

The study of the evolutionary path from bacteria to human beings has shown how each successive species acquired ever more sophisticated capacities to perceive, deal with and control their environment, he said.

“This is the key point because it means that intelligence is something that is encouraged by evolution” because increased intelligence helps the organism better

adapt and survive in its environment, he said.

Therefore, it would be reasonable to expect that over a long enough period of time something like the human being would have emerged because intelligence is something that goes in the direction of evolution, he added.

Theologians and many scientists recognize the universe “is not just a random jumble of elements, but is a structure that we can define as being, if not intelligent, then at least intelligible,” he said.

However, Mr. Auletta said, this has nothing to do with the claims of intelligent design, which accepts that life has evolved over the eons but that because it is so complex its development has been guided by a supreme being or intelligent agent, which some identify as God.

Intelligent design “is not a scientific theory even if it tries to pass itself off as one,” he said.

He said Catholic theologians understand the distinction between God, who is the first cause of the universe, and his autonomous creatures and creation.

“The way he works, God does not suppress second causes,” that is, the laws of nature and the universe, he said.