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THE HUBBLE REPAIR MISSION

THE HUBBLE SPACE TELESCOPE HAS OPENED NEW WINDOWS INTO DEEP SPACE AND ENABLED ASTRONOMERS TO TRAVEL VISUALLY TO NEARLY THE BEGINNING OF TIME.

ORBITING EARTH EVERY 97 MINUTES FOR THE PAST 19 YEARS, THE OBSERVATORY ALSO HAS BEAMED DOWN THOUSANDS OF STELLAR AND PLANETARY PORTRAITS SO VIVID THEY APPEAR THREE-DIMENSIONAL. ICONIC IMAGES HAVE INCLUDED STARS IN THE THROES OF BIRTH AND DEATH, GALAXIES STALKING GALAXIES AND CHUNKS OF COMET SLAMMING INTO JUPITER.

THE SPECTACULAR SCENES ARE MERELY GRACE NOTES TO ASTRONOMERS, WHO USE THE TELESCOPE TO PROBE FAR-OFF SPECKS OF LIGHT FOR DATA ON MOVEMENT AND MOLECULES. BUT THEY'VE MADE THE SCHOOL-BUS-SIZED TELESCOPE THE WORLD'S BEST-KNOWN PIECE OF SCIENTIFIC EQUIPMENT.

"HUBBLE IS NOT JUST ABOUT SCIENCE," SAID ROGER LAUNIUS, A SENIOR CURATOR AT THE SMITHSONIAN NATIONAL AIR AND SPACE MUSEUM. "HUBBLE IS ABOUT ITS STUNNING IMAGERY. WE DECIDED SPACE IS A BEAUTIFUL PLACE BECAUSE OF THIS IMAGERY."

BUT IN THE SEVEN YEARS SINCE IT WAS LAST SERVICED, HUBBLE HAS SUFFERED COMPUTER AND POWER FAILURES THAT HAMPER ITS USEFULNESS AND COULD SHORTEN ITS LIFE.

SO MONDAY, NASA IS SCHEDULED TO LAUNCH THE HIGHEST-PROFILE SPACE-SHUTTLE FLIGHT IN YEARS, SENDING ATLANTIS TO HOOK UP WITH THE SPACE TELESCOPE 353 MILES ABOVE EARTH. FIVE TIGHTLY CHOREOGRAPHED SPACEWALKS, EACH LASTING 6 ½ HOURS, WILL REBUILD THE TELESCOPE AND EXTEND ITS LIFE TO AT LEAST 2014.

WITH THE SHUTTLE DUE TO RETIRE NEXT YEAR, THIS WILL BE THE LAST HUBBLE REPAIR MISSION.

THE ASTRONAUTS' WORK WILL INCLUDE SWAPPING OUT 125-POUND BATTERIES AND REPLACING STABILIZING GYROSCOPES. MORE-DELICATE TASKS WILL ENTAIL EXCHANGING THE MAIN CAMERA FOR A FAR MORE POWERFUL MODEL, INSTALLING AN ULTRAVIOLET-SENSING INSTRUMENT ABLE TO PROVIDE INFORMATION ON THE TEMPERATURE AND COMPOSITION OF DISTANT STARS AND PLANETS, AND REPAIRING GUIDANCE AND DATA SYSTEMS.

WHEN THEY'RE DONE, NASA HOPES HUBBLE'S ABILITY TO SEE DEEP INTO SPACE WILL BE VASTLY UPGRADED, BEYOND ANYTHING IT HAS BEEN ABLE TO DO SINCE IT WAS LAUNCHED IN 1990.

"EVERYTHING WE HAVE DONE UP TO THIS POINT HAS BEEN IN PREPARATION FOR THE FINAL FIVE YEARS," SAID DAVID LECKRONE, HUBBLE PROJECT SCIENTIST AT NASA'S GODDARD SPACE FLIGHT CENTER IN MARYLAND.

PLANET FINDER

AMONG THOSE WHO WILL WATCH CLOSELY IS ASTRONOMER PAUL KALAS OF THE UNIVERSITY OF CALIFORNIA, BERKELEY, WHO USED HUBBLE TO PHOTOGRAPH A SO-CALLED "EXTRASOLAR" PLANET — ONE BEYOND EARTH'S SOLAR SYSTEM — ORBITING A STAR.

"IT'S LIKE LOOKING FOR A LADYBUG ON A HEADLIGHT," SAID SPOKESMAN RAY VILLARD AT HUBBLE'S SCIENCE MANAGING AGENCY, THE SPACE TELESCOPE SCIENCE INSTITUTE IN BALTIMORE. THE STAR CAN BE 10 BILLION TIMES BRIGHTER THAN THE ORBITING PLANET.

NONETHELESS, KALAS' TEAM ANNOUNCED LATE LAST YEAR THAT IT HAD SNAPPED THE FIRST VISIBLE-LIGHT PHOTO OF SUCH A PLANET. IT'S ABOUT 25 LIGHT-YEARS FROM EARTH AND CALLED FOMALHAUT B. TO KALAS, THIS SHOWS THE VALUE OF HUBBLE: TO POINT THE WAY FOR EARTHBOUND SCIENTISTS AND INSTRUMENTS.

"SCIENCE HAS MOVED ALONG A LOT FASTER BECAUSE OF HUBBLE," HE SAID. "I THINK WE ARE A FEW YEARS OR EVEN A DECADE AHEAD OF WHERE WE WOULD BE IF WE DIDN'T HAVE HUBBLE."

IN JANUARY, KALAS MET ASTRONAUT (AND ASTRONOMER) JOHN GRUNSFELD, HUBBLE'S LEAD REPAIRMAN, A VETERAN OF TWO PREVIOUS REPAIR MISSIONS AND A USER OF THE TELESCOPE.

"IT'S REALLY SOMETHING TO HAVE LUNCH WITH SOMEBODY WILLING TO RISK THEIR LIFE FOR THIS SCIENCE," KALAS SAID.

THE CHANCE OF MISSION DISASTER, ELEVATED BECAUSE OF SPACE JUNK IN HUBBLE'S NEIGHBORHOOD, IS 1-IN-229, ACCORDING TO NASA.

FOR A TIME, THE AGENCY WASN'T EVEN WILLING TO FLY TO HUBBLE. AFTER SHUTTLE COLUMBIA'S DISINTEGRATION DURING RE-ENTRY IN 2003, NASA RULED SHUTTLES WOULD FLY ONLY TO THE INTERNATIONAL SPACE STATION, WHICH COULD SERVE AS A "SAFE HAVEN" IN THE EVENT OF DAMAGE TO THE SHUTTLE'S HEAT SHIELD DURING LIFTOFF. HUBBLE'S ORBIT IS MORE THAN 100 MILES HIGHER THAN THE STATION'S.

A 2006 REPAIR MISSION TO THE TELESCOPE WAS CANCELED — BUT RESTORED AFTER PUBLIC OUTCRY. STILL, SHUTTLE ENDEAVOUR WILL SIT ON A NEARBY LAUNCHPAD MONDAY, PREPARED TO LAUNCH A RESCUE FLIGHT WITH A CREW OF FOUR SHOULD ATLANTIS HAVE AN EMERGENCY.

EARLY GLITCHES

THE SPACE OBSERVATORY GOT OFF TO AN INAUSPICIOUS START.

AFTER IT WAS PLACED IN ORBIT AND TURNED ON, ASTRONOMERS FOUND THAT DISTORTIONS IN ITS MAIN MIRROR WERE RESULTING IN FUZZY IMAGES. DAVID LETTERMAN MOCKED THE REVELATION WITH A "TOP TEN HUBBLE TELESCOPE EXCUSES" LIST, WHICH INCLUDED: "THERE'S A LITTLE DOOHICKEY RUBBING AGAINST THE PART THAT LOOKS KIND OF LIKE A COWBOY HAT."

BUT A FIX-IT MISSION IN 1993 INSTALLED A CORRECTIVE LENS, AND HUBBLE WAS SOON REWRITING ASTRONOMY BOOKS. IT PRODUCED STRONG EVIDENCE OF BLACK HOLES. IT WATCHED FRAGMENTS OF THE SHOEMAKER-LEVY 9 COMET SLAM INTO JUPITER. AND IT TOOK THE DEEPEST LOOKS EVER INTO THE UNIVERSE, RECORDING "FAINT SMUDGES" OF LIGHT THAT ORIGINATED JUST 700,000 YEARS AFTER THE BIG BANG. THE IMAGES HELPED PUT THE AGE OF THE UNIVERSE AT 13.7 BILLION YEARS.

EDWARD WEILER, A LONGTIME CHIEF HUBBLE SCIENTIST AND NOW NASA'S ASSOCIATE SCIENCE ADMINISTRATOR, SAID THE TELESCOPE NOT ONLY SURPASSED EXPECTATIONS BUT ALSO CREATED NEW ONES THAT COULDN'T HAVE BEEN CONCEIVED BEFORE IT WENT INTO SPACE.

TOTAL COST $10B

THE TELESCOPE'S ORIGINAL PRICE OF $400 MILLION QUADRUPLED BEFORE IT WAS LAUNCHED, BUT IT'S STILL A BARGAIN, WEILER SAID. THE HUBBLE'S TOTAL COST, INCLUDING FOUR PREVIOUS REPAIR FLIGHTS, STANDS AT ABOUT $10 BILLION.

ASTRONOMERS, THOUGH, ARE EAGER TO GO BEYOND HUBBLE. IN 2014, IF ALL GOES WELL, NASA WILL LAUNCH THE JAMES WEBB SPACE TELESCOPE. IT'S INTENDED TO ORBIT A MILLION MILES FROM EARTH, WITH A MAIN MIRROR FAR LARGER THAN HUBBLE'S. AND IT WILL BE BETTER ABLE TO PEER THROUGH GAS AND DUST CLOUDS TO GET ASTRONOMERS CLOSER TO A VIEW OF WHEN THE UNIVERSE WAS FORMED.

ONCE HUBBLE NO LONGER FUNCTIONS, NASA WILL TURN TO ANOTHER DEVICE THAT WILL BE INSTALLED DURING ATLANTIS' MISSION: A DOCKING PORT THAT WILL ALLOW A FUTURE SPACECRAFT, MOST LIKELY ROBOTIC, TO LATCH ONTO HUBBLE IN ORDER TO GUIDE IT TO A FIERY DEMISE IN EARTH'S ATMOSPHERE OR UP TO THE RELATIVE SAFETY OF A GRAVEYARD — OR "MUSEUM" — ORBIT.

ALAN DRESSLER OF CARNEGIE OBSERVATORIES IN PASADENA, CALIF., WHOM SOME REFER TO AS THE FATHER OF THE JAMES WEBB SPACE TELESCOPE, SAID ASTRONOMERS YEARN TO ANSWER TWO CORE QUESTIONS: HOW DID WE GET HERE — AND ARE WE ALONE?

HUBBLE, HE SAID, HAS GIVEN ASTRONOMERS SOME OF THE MOST IMPORTANT CLUES SO FAR BY PROVIDING A GLIMPSE OF THE EARLIEST STARS AND GALAXIES AND BY BLAZING A TRAIL FOR THE WEBB TELESCOPE TO FOLLOW FOR AN EVEN CLOSER LOOK.

"THE HUBBLE SPACE TELESCOPE GOT US TO THE DOORWAY OF THAT ERA," DRESSLER SAID. "THAT'S A HUGE ACCOMPLISHMENT."

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THE SCIENCE SEGMENT

SHUTTLE ATLANTIS LANDS SAFELY AFTER HUBBLE SUCCESS

SPACE SHUTTLE ATLANTIS LANDED SAFELY IN CALIFORNIA ON SUNDAY, BRINGING HOME SEVEN TRIUMPHANT ASTRONAUTS AFTER THEIR SUCCESSFUL SERVICE CALL ON THE BELOVED HUBBLE SPACE TELESCOPE.

AFTER TWO DAYS OF DELAY DUE TO STORMS, THE THIRD TIME WAS THE CHARM FOR ATLANTIS AS IT TOUCHED DOWN ON THE DRY LAKEBED RUNWAY AT EDWARDS AIR FORCE BASE AT 11:40 A.M. EDT (1540 GMT) TO END A 13-DAY MISSION TO THE 19-YEAR-OLD HUBBLE. RAINY WEATHER THWARTED THE SHUTTLE'S ATTEMPTS TO LAND IN FLORIDA EARLIER TODAY AND ON FRIDAY AND SATURDAY.

"WELCOME HOME, ATLANTIS!" RADIOED MISSION CONTROL. "CONGRATULATIONS ON A VERY SUCCESSFUL MISSION GIVING HUBBLE A NEW SET OF EYES THAT WILL CONTINUE TO EXPAND OUR KNOWLEDGE OF THE UNIVERSE."

"THANK YOU, HOUSTON, IT WAS A THRILL FROM START TO FINISH," ATLANTIS COMMANDER SCOTT ALTMAN REPLIED. "WE'VE HAD A GREAT RIDE. IT TOOK A WHOLE TEAM ACROSS THE COUNTRY TO PULL IT OFF, OUR HATS OFF TO YOU ALL."

RETURNING TO EARTH WITH ALTMAN WERE PILOT GREG C. JOHNSON AND MISSION SPECIALISTS MICHAEL GOOD, MEGAN MCARTHUR, JOHN GRUNSFELD, MICHAEL MASSIMINO AND ANDREW FEUSTEL.

"WE'RE NOT LEAVING AN AGING TELESCOPE, WE'RE LEAVING A NEWLY REFURBISHED TELESCOPE," ALTMAN SAID DURING A SENATE SUBCOMMITTEE HEARING THURSDAY, WHEN - IN A FIRST - HIS CREW TESTIFIED FROM ORBIT. "A TELESCOPE THAT IS NOW AT THE APEX OF ITS CAPABILITIES, AND WILL BE FOR A LONG TIME TO COME."

FIXING HUBBLE

ALTMAN AND HIS CREW SPENT JUST UNDER A WEEK LINKED WITH HUBBLE, WHERE SPACEWALKING ASTRONAUTS INSTALLED TWO NEW INSTRUMENTS, REPLACED AGING BATTERIES AND GYROSCOPES, AND REVIVED TWO LONG-DEAD INSTRUMENTS THAT WERE NEVER DESIGNED TO BE OPENED, LET ALONE REPAIRED, IN SPACE.

THE RESULT: A REJUVENATED HUBBLE MORE POWERFUL THAN EVER BEFORE, ONE THAT IS CAPABLE OF PEERING BACK TO WHEN THE UNIVERSE, NOW 13.7 BILLION YEARS OLD, WAS JUST A NASCENT 500 MILLION YEARS OF AGE. THE SPACE TELESCOPE'S NEW INSTRUMENTS AND REPAIRED TOOLS SHOULD CONTINUE ITS WORK TO PROBE THE STRUCTURE OF THE UNIVERSE, BLACK HOLES AND THE EXISTENCE OF DARK ENERGY.

"THIS IS A 110 PERCENT SUCCESSFUL MISSION," SAID DAVE LECKRONE, HUBBLE'S SENIOR PROJECT SCIENTIST, BEFORE LANDING.

"I HOPE HUBBLE DOES WELL AND HAS A LONG LIFE AHEAD OF IT, AND LOTS OF INTERESTING SCIENCE," SAID GRUNSFELD, A SELF-DESCRIBED "HUBBLE HUGGER" AND ASTROPHYSICIST WHO MADE HIS THIRD TRIP TO HUBBLE - AND FIFTH CAREER SPACEFLIGHT - DURING THE MISSION.

GRUNSFELD SAID THAT HUMANS AND HUBBLE HAVE A STORIED HISTORY TOGETHER BROUGHT TO LIGHT BY FLIGHTS LIKE THIS ONE AND THE 1993 FLIGHT THAT FIXED THE TELESCOPE'S BLURRY VISION DUE TO ITS FLAWED MIRROR. THE CAMERA AND CORRECTIVE OPTICS THAT CLEARED HUBBLE'S VIEW RETURNED HOME ABOARD ATLANTIS AND ARE DESTINED FOR THE SMITHSONIAN INSTITUTE.

ATLANTIS' LAST MISSION COST ABOUT $1.1 BILLION TO FIX HUBBLE, THOUGH NEARLY $10 BILLION HAS BEEN INVESTED IN THE TELESCOPE SINCE ITS INCEPTION AND 1990 LAUNCH. NASA WILL HAVE TO PAY AN EXTRA $1.8 MILLION TO FERRY ATLANTIS BACK TO ITS HANGAR HERE AT THE KENNEDY SPACE CENTER, A PROCESS WHICH SHOULD TAKE A WEEK AND DEPENDS ON GOOD WEATHER.

THE SHUTTLE ORBITED EARTH 197 TIMES AND FLEW 5.3 MILLION MILES DURING THE TREK, WHICH MARKED NASA'S 126TH SHUTTLE FLIGHT AND THE 30TH MISSION FOR ATLANTIS. NASA PLANS TO FLY UP TO EIGHT MORE SHUTTLE MISSIONS TO COMPLETE CONSTRUCTION OF THE INTERNATIONAL SPACE STATION.

SPACE TELESCOPE SUCCESS

ATLANTIS ASTRONAUTS WERE HAILED THIS WEEK BY THE SENATE AND U.S. PRESIDENT BARACK OBAMA, WHO PERSONALLY CALLED THE SHUTTLE WEDNESDAY TO CONGRATULATE THE CREW ON THE SUCCESS AT HUBBLE.

THEIR WORK WAS ALL THE MORE POIGNANT, SINCE IT WAS THE FIFTH - AND LAST - FLIGHT TO REPAIR AND UPGRADE HUBBLE BEFORE NASA RETIRES ITS SHUTTLE FLEET NEXT YEAR. THE SHUTTLE CARRIED AN IMAX 3-D CAMERA TO RECORD THE FLIGHT.

"WHEN WE TALK ABOUT THE HUBBLE, AND GIVING IT ESSENTIALLY A NEW LIFE, AND A NEW WAY OF GOING AND SEEING THE UNIVERSE, YOU'VE TOUCHED OUR HEARTS AND YOU'VE ALSO MADE HISTORY," SEN. BARBARA MIKULSKI (D-MD.), WHO CHAIRS THE SCIENCE APPROPRIATIONS SUBCOMMITTEE, TOLD THE ASTRONAUTS THURSDAY. SHE WISHED THEM A HAPPY AND SAFE LANDING.

WORKING IN TWO-MAN TEAMS, ATLANTIS' FOUR-MAN HUBBLE REPAIR CREW PERSEVERED THROUGH FIVE DAUNTING SPACEWALKS, AT TIMES STRUGGLING THROUGH STUCK BOLTS AND OTHER SNAGS WHICH THREATENED TO THWART THEIR ATTEMPTED FIXES.

"EVERY SINGLE [SPACEWALK] TO ME WAS A NAIL-BITER," JOHNSON SAID. "YOU SHOULD HAVE SEEN THE ACTION OUT THE BACK WINDOW ... I WAS ON THE EDGE OF MY SEAT."

DURING THEIR SPACEWALKS, ATLANTIS ASTRONAUTS INSTALLED A POWERFUL NEW WIDE-FIELD CAMERA AND A SUPER-SENSITIVE SPECTROGRAPH FOR STUDYING COSMIC STRUCTURE. THEY ALSO REPAIRED HUBBLE'S MAIN IMAGER – THE ADVANCED CAMERA FOR SURVEYS – AND A VERSATILE SPECTROGRAPH, WHICH FAILED IN 2007 AND 2004, RESPECTIVELY.

THE ASTRONAUTS ALSO ATTACHED A DOCKING COLLAR ON HUBBLE THAT WILL ALLOW A FUTURE ROBOTIC VEHICLE TO LATCH ON SOMETIME AFTER 2020 AND SEND IT PLUNGING INTO THE PACIFIC OCEAN ONCE ITS MISSION ENDS.

NEARLY NEVER WAS

ATLANTIS' FINAL FLIGHT TO HELP HUBBLE LAUNCHED ON MAY 11, BUT ALMOST NEVER WAS. NASA INITIALLY CANCELED THE FLIGHT IN 2004 IN THE WAKE OF THE COLUMBIA SHUTTLE DISASTER THAT KILLED SEVEN ASTRONAUTS BECAUSE OF ITS RISK. THE MISSION WAS RESURRECTED IN 2006, BUT BY THEN NASA HAD A PLAN.

UNLIKE MISSIONS TO THE INTERNATIONAL SPACE STATION, WHERE ASTRONAUTS CAN TAKE REFUGE IF THEIR SHUTTLE IS DAMAGED, ATLANTIS HAD NO SUCH SAFETY NET. HUBBLE FLIES HIGHER AND IN A DIFFERENT ORBIT, PUTTING THE SAFE HAVEN OF THE STATION BEYOND REACH OF ATLANTIS' CREW. HUBBLE ALSO FLIES 350 MILES (563 KM) ABOVE EARTH, WHERE THE LEVELS OF SPACE JUNK AND CHANCES OF SERIOUS DAMAGE ARE HIGHER THAN AT THE 220-MILE (354-KM) HIGH SPACE STATION.

NASA'S SOLUTION: A SECOND SPACE SHUTTLE - ENDEAVOUR - WHICH STOOD READY ATOP A LAUNCH PAD THROUGHOUT THE MISSION, PRIMED TO LAUNCH A RESCUE FLIGHT IF NEEDED. THE PRECAUTION WAS NEVER NEEDED AND NASA RELEASED ENDEAVOUR FROM ITS RESCUE SHIP STATUS ON THURSDAY.

ATLANTIS ASTRONAUTS SAID THERE WAS NEVER A QUESTION; FIXING HUBBLE WAS WORTH THE RISK.

"HUBBLE REALLY HAS STRUCK A FUNDAMENTAL CORD IN HUMAN HEARTS AROUND THE WORLD," GRUNSFELD SAID. "IT'S PROBABLY THE MOST SIGNIFICANT SCIENCE INSTRUMENT OF ALL TIME IN TERMS OF ITS PRODUCTIVITY. ASTRONOMERS TRY TO USE HUBBLE TO ANSWER FUNDAMENTAL QUESTIONS THAT WE'VE HAD SINCE THE BEGINNING OF HUMAN HISTORY."

THOSE ASTRONOMERS, HUBBLE MANAGERS SAID, ARE CHOMPING AT THE BIT TO USE THE TELESCOPE'S NEW INSTRUMENTS. THE TELESCOPE IS EXPECTED TO RESUME SCIENCE OBSERVATIONS IN LATE SUMMER AFTER A RIGOROUS CHECKOUT PERIOD.

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THE ARENA GOES ABROAD

RUSSIA - THE TUNGUSKA METEOR EVENT

DID A UFO DELIBERATELY CRASH INTO A METEOR TO SAVE EARTH 100 YEARS AGO? THAT'S WHAT ONE RUSSIAN SCIENTIST IS CLAIMING.

DR. YURI LABVIN, PRESIDENT OF THE TUNGUSKA SPATIAL PHENOMENON FOUNDATION, INSISTS THAT AN ALIEN SPACECRAFT SACRIFICED ITSELF TO PREVENT A GIGANTIC METEOR FROM SLAMMING INTO THE PLANET ABOVE SIBERIA ON JUNE 30, 1908.

THE RESULT WAS WAS THE TUNGUSKA EVENT, A MASSIVE BLAST ESTIMATED AT 15 MEGATONS THAT DOWNED 80 MILLION TREES OVER NEARLY 100 SQUARE MILES. EYEWITNESSES REPORTED A BRIGHT LIGHT AND A HUGE SHOCK WAVE, BUT THE AREA WAS SO SPARSELY POPULATED NO ONE WAS KILLED.

MOST SCIENTISTS THINK THE BLAST WAS CAUSED BY A METEORITE EXPLODING SEVERAL MILES ABOVE THE SURFACE. BUT LABVIN THINKS QUARTZ SLABS WITH STRANGE MARKINGS FOUND AT THE SITE ARE REMNANTS OF AN ALIEN CONTROL PANEL, WHICH FELL TO THE GROUND AFTER THE UFO SLAMMED INTO THE GIANT ROCK.

"WE DON'T HAVE ANY TECHNOLOGIES THAT CAN PRINT SUCH KIND OF DRAWINGS ON CRYSTALS," LABVIN TOLD THE MACEDONIAN INTERNATIONAL NEWS AGENCY. "WE ALSO FOUND FERRUM SILICATE THAT CAN NOT BE PRODUCED ANYWHERE, EXCEPT IN SPACE."

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FAMOUS QUOTES

JERRY ALLEN COYNE (BORN 1949) IS 59 YEARS OLD.

HE IS AN AMERICAN PROFESSOR OF BIOLOGY, KNOWN FOR HIS COMMENTARY ON THE INTELLIGENT DESIGN DEBATE. HE IS CURRENTLY A PROFESSOR AT THE UNIVERSITY OF CHICAGO IN THE DEPARTMENT OF ECOLOGY AND EVOLUTION. HIS CONCENTRATION IS SPECIATION AND ECOLOGICAL AND EVOLUTIONARY GENETICS, PARTICULARLY AS THEY INVOLVE DROSOPHILA.

"IF THE HISTORY OF SCIENCE SHOWS US ANYTHING,

IT IS THAT WE GET NOWHERE BY LABELING OUR IGNORANCE 'GOD'."