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BRAIN DEVELOPMENT

THE BRAIN'S CENTER OF REASONING AND PROBLEM SOLVING IS AMONG THE LAST TO MATURE, A NEW STUDY GRAPHICALLY REVEALS. THE DECADE-LONG MAGNETIC RESONANCE IMAGING (MRI) STUDY OF NORMAL BRAIN DEVELOPMENT, FROM AGES 4 TO 21, BY RESEARCHERS AT NIH'S NATIONAL INSTITUTE OF MENTAL HEALTH (NIMH) AND UNIVERSITY OF CALIFORNIA LOS ANGELES (UCLA) SHOWS THAT SUCH "HIGHER-ORDER" BRAIN CENTERS, SUCH AS THE PREFRONTAL CORTEX, DON'T FULLY DEVELOP UNTIL YOUNG ADULTHOOD.

A TIME-LAPSE 3-D MOVIE THAT COMPRESSES 15 YEARS OF HUMAN BRAIN MATURATION, AGES 5 TO 20, INTO SECONDS SHOWS GRAY MATTER - THE WORKING TISSUE OF THE BRAIN'S CORTEX - DIMINISHING IN A BACK-TO-FRONT WAVE, LIKELY REFLECTING THE PRUNING OF UNUSED NEURONAL CONNECTIONS DURING THE TEEN YEARS.

CORTEX AREAS CAN BE SEEN MATURING AT AGES IN WHICH RELEVANT COGNITIVE AND FUNCTIONAL DEVELOPMENTAL MILESTONES OCCUR. THE SEQUENCE OF MATURATION ALSO ROUGHLY PARALLELS THE EVOLUTION OF THE MAMMALIAN BRAIN, SUGGEST DRS. NITIN GOGTAY, JUDITH RAPOPORT, NIMH, AND PAUL THOMPSON, ARTHUR TOGA, UCLA, AND COLLEAGUES, WHOSE STUDY IS PUBLISHED ONLINE DURING THE WEEK OF MAY 17, 2004 IN THE PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES.

"TO INTERPRET BRAIN CHANGES WE WERE SEEING IN NEURODEVELOPMENTAL DISORDERS LIKE SCHIZOPHRENIA, WE NEEDED A BETTER PICTURE OF HOW THE BRAIN NORMALLY DEVELOPS," EXPLAINED RAPOPORT.

THE RESEARCHERS SCANNED THE SAME 13 HEALTHY CHILDREN AND TEENS EVERY TWO YEARS AS THEY GREW UP, FOR 10 YEARS. AFTER CO-REGISTERING THE SCANS WITH EACH OTHER, USING AN INTRICATE SET BRAIN ANATOMICAL LANDMARKS, THEY VISUALIZED THE EBB AND FLOW OF GRAY MATTER - NEURONS AND THEIR BRANCH-LIKE EXTENSIONS - IN MAPS THAT, TOGETHER, FORM THE MOVIE SHOWING BRAIN MATURATION FROM AGES 5 TO 20.

IT WAS LONG BELIEVED THAT A SPURT OF OVERPRODUCTION OF GRAY MATTER DURING THE FIRST 18 MONTHS OF LIFE WAS FOLLOWED BY A STEADY DECLINE AS UNUSED CIRCUITRY IS DISCARDED. THEN, IN THE LATE 1990S, NIMH'S DR. JAY GIEDD, A CO-AUTHOR OF THE CURRENT STUDY, AND COLLEAGUES, DISCOVERED A SECOND WAVE OF OVERPRODUCTION OF GRAY MATTER JUST PRIOR TO PUBERTY, FOLLOWED BY A SECOND BOUT OF "USE-IT-OR-LOSE-IT" PRUNING DURING THE TEEN YEARS.

THE NEW STUDY FOUND THAT THE FIRST AREAS TO MATURE (E.G., EXTREME FRONT AND BACK OF THE BRAIN) ARE THOSE WITH THE MOST BASIC FUNCTIONS, SUCH AS PROCESSING THE SENSES AND MOVEMENT. AREAS INVOLVED IN SPATIAL ORIENTATION AND LANGUAGE (PARIETAL LOBES) FOLLOW. AREAS WITH MORE ADVANCED FUNCTIONS -- INTEGRATING INFORMATION FROM THE SENSES, REASONING AND OTHER "EXECUTIVE" FUNCTIONS (PREFRONTAL CORTEX) - MATURE LAST.

IN A RELATED STUDY PUBLISHED A FEW YEARS AGO, RAPOPORT AND COLLEAGUES DISCOVERED AN EXAGGERATED WAVE OF GRAY MATTER LOSS IN TEENS WITH EARLY ONSET SCHIZOPHRENIA.

THESE TEENS, WHO BECAME PSYCHOTIC PRIOR TO PUBERTY, LOST FOUR TIMES THE NORMAL AMOUNT OF GRAY MATTER IN THEIR FRONTAL LOBES, SUGGESTING THAT CHILDHOOD ONSET SCHIZOPHRENIA "MAY BE AN EXAGGERATION OF A NORMAL MATURATION PROCESS, PERHAPS RELATED TO EXCESSIVE SYNAPTIC PRUNING," NOTE THE RESEARCHERS.

BY CONTRAST, CHILDREN WITH AUTISM SHOW AN ABNORMAL BACK-TO-FRONT WAVE OF GRAY MATTER INCREASES, RATHER THAN DECREASES, SUGGESTING "A SPECIFIC FAULTY STEP IN EARLY DEVELOPMENT."

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THE SCIENCE SEGMENT

GIANT TITANOBOA SNAKE RULED THE EARTH AFTER THE DINOSAURS

A TITANIC SNAKE THAT SNACKED ON CROCODILES AND WAS LONGER THAN A LONDON BUS HAS BEEN IDENTIFIED AS THE TOP PREDATOR TO WALK, OR AT LEAST SLITHER, THE LAND WHEN THE DINOSAURS DISAPPEARED.

IT WEIGHED 1.25 TONS AND WITH A LENGTH OF 45 FEET OR MORE IT WOULD HAVE BEEN ABLE TO TAKE ON AND EAT PRETTY MUCH ANY OTHER ANIMAL IT CAME ACROSS.

THE NEWLY DISCOVERED TYPE OF SNAKE, NAMED TITANOBOA IN HONOR OF ITS IMMENSE SIZE, WAS FOR 10 MILLION YEARS THE LARGEST LAND PREDATOR ON EARTH.

AT LEAST 28 INDIVIDUAL SPECIMENS HAVE BEEN UNCOVERED IN COLOMBIA AND, WITH ALL OF THEM BEING AROUND 40 FEET LONG, RESEARCHERS SAID IT IS LIKELY THE SPECIES COULD HAVE REACHED MUCH FURTHER THAN 45 FEET.

REMAINS OF TITANOBOA CERREJONENSIS WERE FOUND IN A LAYER OF ROCK AT THE CERREJON COAL MINE, ONE OF THE LARGEST OPEN-PIT MINES IN THE WORLD.

FOSSILS RECOVERED FROM THE SITE OVER THE LAST FIVE YEARS HAVE GIVEN RESEARCHERS THE MOST DETAILED PICTURE YET OF LIFE IN TROPICAL SOUTH AMERICA IN THE YEARS FOLLOWING THE DISAPPEARANCE OF THE DINOSAURS.

ALONGSIDE THE ENORMOUS SNAKES, WHICH WERE SO WIDE IT WOULD HAVE BEEN A SQUEEZE FOR THEM TO GET THROUGH A DOORWAY, WERE FOSSILS OF TURTLES AND GIANT CROCODILE-LIKE DYROSAURS.

OTHER FOSSIL FINDS, INCLUDING FISH, GASTROPODS AND PLANTS SUCH AS PALMS, ARE PROVIDING RESEARCHERS WITH THEIR FIRST GLIMPSES OF THE TROPICAL ECOSYSTEM THAT LAID THE FOUNDATIONS FOR THE AMAZON FOREST.

JONATHAN BLOCH, OF THE UNIVERSITY OF FLORIDA, WAS ONE OF THE RESEARCHERS WHO ANALYSED THE REMAINS OF THE SNAKE, THE BIGGEST THAT EVER LIVED.

HE SAID: “IT WAS NOT ONLY THE BIGGEST PREDATOR IN THE REGION, AS FAR AS WE KNOW, BUT IT WAS THE LARGEST TERRESTRIAL VERTEBRATE KNOWN ON THE FACE OF THE PLANET FOR AT LEAST 10 MILLION YEARS.

“IT COULD HAVE EATEN PRETTY MUCH ANYTHING THAT CAME ITS WAY. IF WE HAD TO GUESS, IT PROBABLY ATE A LOT OF FISH AND CROCODYLIFORMS.

“IT IS POSSIBLE THAT THE EXTINCTION OF THE DINOSAURS 65 MILLION YEARS OPENED UP THE OPPORTUNITY FOR THE EVOLUTION OF ANOTHER TOP-PREDATOR SUCH AS TITANOBOA.”

HE ADDED: “TRULY ENORMOUS SNAKES REALLY SPARK PEOPLE'S IMAGINATION, BUT REALITY HAS EXCEEDED THE FANTASIES OF HOLLYWOOD. THE SNAKE THAT TRIED TO EAT JENNIFER LOPEZ IN THE MOVIE ANACONDA IS NOT AS BIG AS THE ONE WE FOUND.”

CARLOS JARAMILLO, OF THE SMITHSONIAN INSTITUTION IN PANAMA, SAID THE SPECIMENS UNCOVERED FROM THE MINE ARE LIKELY TO HAVE BEEN MERELY AVERAGE IN SIZE, MEANING THAT SOME INDIVIDUALS WOULD HAVE BEEN MUCH BIGGER.

THE RETICULATED PYTHON, FROM SOUTH EAST ASIA, IS THE LONGEST LIVING SPECIES RECORDED, ACCORDING TO GUINNESS WORLD RECORDS, WITH ONE INDIVIDUAL REACHING ALMOST 33 FEET LONG BUT THE AVERAGE LENGTH FOR THE SPECIES IS ONLY 20 FEET.

THE SIZE OF THE COLD-BLOODED TITANOBOA INDICATED TO RESEARCHERS THAT THE TROPICAL COASTAL RIVER SYSTEM IT OCCUPIED WOULD HAVE BEEN WARMER THAN THE TROPICS TODAY. USING THE SNAKE’S PROPORTIONS THEY WORKED OUT THAT THE TROPICS 60 MILLION YEARS AGO WOULD HAVE BEEN ABOUT 32C, SOME 4C WARMER THAN NOW.

JASON HEAD, OF THE UNIVERSITY OF TORONTO IN CANADA AND THE SMITHSONIAN INSTITUTION, SAID AS THE FINDINGS WERE PUBLISHED IN THE JOURNAL NATURE: “THE DISCOVERY OF TITANOBOA CHALLENGES OUR UNDERSTANDING OF PAST CLIMATES AND ENVIRONMENTS, AS WELL AS THE BIOLOGICAL LIMITATIONS ON THE EVOLUTION OF GIANT SNAKES.”

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SCIENTISTS MIX IN METAL TO MAKE SUPER-STRENGTH SPIDER SILK

SPIDER SILK IS ALREADY NOTABLE FOR BEING ONE OF THE MOST ROBUST SUBSTANCES BIOLOGY HAS PRODUCED. NOW, SCIENTISTS HAVE FOUND A WAY OF MAKING IT EVEN TOUGHER: INFILTRATE METALS INTO THE PROTEINS THAT COMPRISE THE SILK.

IN A NUMBER OF CASES, OUR FINEST MANUFACTURING TECHNIQUES HAVEN'T TOUCHED THE MATERIALS THAT A FEW BILLION YEARS OF EVOLUTION HAVE PRODUCED. CAREFULLY TUNED BIOCHEMISTRY CAN TAKE A COLLECTION OF OTHERWISE ABUNDANT AND MUNDANE SUBSTANCES AND FASHION THEM INTO MATERIALS WITH SOME AMAZING PROPERTIES, LIKE THE SURFACE OF GECKO FEET OR THE SHELLS OF MOLLUSKS. BUT THAT DOESN'T MEAN THAT NATURE'S ACHIEVEMENTS CAN'T BE TWEAKED. SCIENTISTS HAVE NOW FOUND THAT THEY CAN MAKE SPIDER SILK EVEN TOUGHER BY INFILTRATING SOME METAL ATOMS INTO THE SPIDER'S HANDIWORK.

THE AUTHORS WERE INSPIRED BY A DIFFERENT ANIMAL ENTIRELY, THE MARINE POLYCHAETE WORM, WHICH HAS JAWS THAT CAN CRUSH THROUGH THE SHELLS OF VARIOUS OCEAN DENIZENS (ONE OF THESE WORMS WAS RECENTLY DISCOVERED CHEWING THROUGH THE CORAL IN AN AQUARIUM). PREVIOUS RESEARCH HAS SUGGESTED THAT THE INCREDIBLE STRENGTH OF THESE JAWS COMES FROM A TYPICAL BIOLOGICAL MATERIAL SPIKED WITH A SMALL AMOUNT OF AN INORGANIC METAL—ZINC, IN THIS CASE. ALTHOUGH THE ZINC SEEMS TO BE PUT IN PLACE AS THE JAWS ARE FORMED BY THE WORMS, THE RESEARCHERS WONDERED IF IT MIGHT BE POSSIBLE TO ADD METALS BACK INTO SOME EXISTING BIOLOGICAL MATERIALS.

FOR THEIR RAW MATERIAL, THEY CHOSE THE DRAGLINE SILK OF THE SPIDER ARANEUS. SPIDER SILK IS ALREADY NOTABLE FOR HAVING A TENSILE STRENGTH HIGHER THAN MANY ALLOYS OF STEEL, EVEN THOUGH ITS COMPRISED ENTIRELY OF PROTEINS.

THE AUTHORS BEGAN BY COLLECTING DRAGLINE SILK FROM THE SPIDERS. TO GET THE METAL INTO PREEXISTING DRAGLINE SILK, THE AUTHORS USED AN ATOMIC LAYER DEPOSITION TECHNIQUE, WHICH USES REPEATED PULSES OF VAPORIZED MATERIAL THAT CONTAINS METALS. IN THIS CASE, THEY TRIED SEVERAL METAL COMPOUNDS, INCLUDING DIETHYL ZINC, TRIMETHLY ALUMINUM, AND A TITANIUM COMPOUND, ALL VAPORIZED IN THE PRESENCE OF WATER. WATER ALONE WAS USED AS A CONTROL. ALL OF THE COMPOUNDS DRAMATICALLY INCREASED BOTH THE TENSILE STRENGTH OF THE SILK, AS WELL AS ITS EXTENSIBILITY. IN SHORT, THE RESEARCHERS HAD TAKEN AN UNUSUALLY TOUGH MATERIAL AND MADE IT EVEN TOUGHER, WITH THE BEST RESULTS PRODUCED BY THE ALUMINUM AND TITANIUM TREATMENTS.

NOT SURPRISINGLY, THE ATOMIC LAYER DEPOSITION HAD ALSO DONE WHAT ITS NAME SUGGESTS AND LEFT A LAYER OF METAL ON THE SURFACE OF THE SILK, SO THE AUTHORS SPEND A SIGNIFICANT PORTION OF THE PAPER RULING OUT THE SURFACE COATING AS THE SOURCE OF THE IMPROVED PROPERTIES. ON BASIC LOGIC ALONE, THEY ARGUE THAT THE THIN SURFACE COATING WOULD PROBABLY CRACK AS THE SILK STRETCHED, SO IT SHOULDN'T CONTRIBUTE MUCH TO THE OVERALL STRENGTH. THEY ALSO SHOWED THAT THE FULL PROCESS—REPEATED PULSES OF ALL THE REACTANTS IN VAPOR FORM—WAS NECESSARY TO IMPROVE THE FINAL PROPERTIES OF THE SILK, AND THEY USED VARIOUS SCANNING TECHNIQUES TO CONFIRM THAT METAL ATOMS WERE PRESENT IN THE INTERIOR OF THE SILK STRANDS.

BUT THE AMOUNT OF TITANIUM PRESENT THERE WAS EXTREMELY SMALL, ONLY ABOUT TWO PERCENT BY WEIGHT OF THE TOTAL SILK STRAND, WHICH INDICATES THAT THE SILK WASN'T SIMPLY ACTING AS A TEMPLATE FOR THE FORMATION OF METALLIC STRUCTURES. THE AUTHORS SUGGEST THAT, INSTEAD, THE METAL WAS INTEGRATED INTO THE PROTEINS PROPER. SPIDER SILK GETS ITS ROBUSTNESS IN PART FROM THE FACT THAT ITS INTERNAL STRUCTURE ALLOWS MANY INDIVIDUALLY WEAK HYDROGEN BONDS TO FORM; THESE COLLECTIVELY PROVIDE THE MATERIAL WITH SIGNIFICANT STRENGTH. EVEN WHEN THEY ARE PULLED APART, THE HYDROGEN BONDS CAN FORM IN DIFFERENT CONFIGURATIONS, ALLOWING THE MATERIAL TO STAY TOUGH EVEN UNDER STRAIN.

IN THE PRESENCE OF METAL ATOMS, THE AUTHORS ARGUE, SOME OF THE HYDROGEN BONDING GETS REPLACED BY BONDS FORMED USING A METAL ATOM. POSSIBILITIES INCLUDE BOTH CHELATION OF THE METAL THROUGH CARBOXYL AND HISTIDINE GROUPS IN THE PROTEINS OR, POTENTIALLY, COVALENT BONDS BETWEEN THE METAL AND THE WEB PROTEINS.

THE AUTHORS SUSPECT THAT THIS APPROACH MAY WORK FOR OTHER BIOLOGICAL MATERIALS THAT ARE THIN ENOUGH TO BE INFILTRATED BY THEIR METAL DEPOSITION TECHNIQUE—THEY'RE ALREADY TESTING IT ON THE MEMBRANE FROM CHICKEN EGGS. THERE ARE A NUMBER OF ONGOING COMMERCIAL EFFORTS TO PRODUCE SPIDER SILK PROTEINS IN BULK, SO DEPENDING ON WHETHER THE METAL DEPOSITION PROCESS CAN SCALE, IT MIGHT BE POSSIBLE TO PRODUCE SIGNIFICANT QUANTITIES OF THIS MODIFIED MATERIAL.

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THE ARENA GOES ABROAD

INDIA - ASIAN HEART DISEASE GENE FOUND

A GENE MUTATION THAT ALMOST GUARANTEES THE DEVELOPMENT OF HEART DISEASE IS CARRIED BY 60M PEOPLE, RESEARCHERS SAY.

AROUND 4% PEOPLE FROM THE INDIAN SUBCONTINENT HAVE THE MUTATION, WHICH INCREASES THE RISK OF HEART DISEASE SEVEN-FOLD, NATURE GENETICS REPORTS.

IT IS RARE TO FIND A GENE WHICH HAS SUCH A BIG EFFECT AND IS SO COMMON, THE INTERNATIONAL TEAM OF SCIENTISTS SAID.

EXPERTS SAID IT COULD LEAD TO A SCREENING TEST BUT IT WAS NOT YET CLEAR IF IT WOULD AID TREATMENT DECISIONS.

HEART DISEASE IS THE NUMBER ONE KILLER IN THE WORLD AND INDIA IS PARTICULARLY BADLY HIT, WITH THE PROBLEM SET TO INTENSIFY IN COMING YEARS.

THE WORLD HEALTH ORGANIZATION ESTIMATES THAT BY 2010, INDIA WILL HAVE 60% OF THE WORLD'S HEART PATIENTS.

THE RESEARCHERS FIRST IDENTIFIED THE MUTATION IN THE HEART PROTEIN GENE MYBPC3 FIVE YEARS AGO IN TWO INDIAN FAMILIES WITH CARDIOMYOPATHY - A DISEASE CAUSING DETERIORATION OF THE HEART MUSCLE.

IT PROVIDES GOOD GROUNDS FOR SCREENING PEOPLE OF SOUTH ASIAN ORIGIN WITH UNEXPLAINED HEART FAILURE AND SCREENING THEIR FAMILIES IF POSITIVE

PROFESSOR PETER WEISSBERG, BRITISH HEART FOUNDATION

IN THE LATEST STUDY THEY LOOKED FOR THE MUTATION IN 800 PEOPLE WITH HEART DISEASE AND 700 CONTROLS.

THEY FOUND THE MUTATION WAS COMMON - CARRIED BY 1% OF THE WORLD'S POPULATION.

AND THE INCREASED RISK OF HEART DISEASE - SEVEN TIMES THAT OF PEOPLE WITHOUT THE MUTATION - IS SO HIGH IS ALMOST GUARANTEES THE DEVELOPMENT OF HEART PROBLEMS.

IN THE TEST TUBE, CELLS WITH THE MUTATION - WHERE 25 LETTERS OF GENETIC CODE ARE MISSING - THE MYBPC3 PROTEIN IS ABNORMAL AND "MESSES UP" THE STRUCTURE OF THE HEART MUSCLE.

THE RESEARCHERS SAID IN YOUNGER PEOPLE THE BODY SEEMED TO HAVE AN EFFECTIVE MECHANISM FOR BREAKING DOWN AND REMOVING THE MUTATED PROTEIN.

BUT WITH AGE THE MECHANISM STOPS WORKING EFFICIENTLY WHICH IS WHY HEART DISEASE IN PEOPLE CARRYING THE GENE DEVELOPS IN MIDDLE AGE.

CHRIS TYLER-SMITH, A SENIOR INVESTIGATOR AT THE WELLCOME TRUST SANGER INSTITUTE, HINXTON, UK, AND ONE OF THE STUDY AUTHORS SAID THE MUTATION PROBABLY AROSE AROUND 30,000 YEARS AGO AND HAS BEEN ABLE TO SPREAD BECAUSE ITS EFFECTS USUALLY DEVELOP ONLY AFTER PEOPLE HAVE HAD THEIR CHILDREN.

"WHAT WE EXPECT TO FIND ARE COMMON MUTATIONS WITH VERY SMALL EFFECTS OR RARE MUTATIONS WITH BIG EFFECTS.

"THE COMBINATION OF BIG EFFECTS AND HIGH FREQUENCY IS SURPRISING."

HE SAID "IN PRINCIPLE" IT WOULD BE EXTREMELY EASY TO TEST PEOPLE AT A YOUNG AGE FOR THE GENE BUT AT THE MOMENT ALL THAT DOCTORS COULD DO WOULD BE TO OFFER HEALTHY LIFESTYLE ADVICE.

"IN THE LONGER TERM I THINK TRYING TO IMPROVE THE EFFICIENCY OF THE PROTEIN DEGRADATION MECHANISM MIGHT BE A NOVEL APPROACH FOR TREATMENT - ALL YOU WOULD HAVE TO DO IS POSTPONE THE EFFECTS FOR A FEW DECADES."

PROFESSOR PETER WEISSBERG, MEDICAL DIRECTOR AT THE BRITISH HEART FOUNDATION, SAID THE STUDY UNDERPINS THE STRONG GENETIC NATURE OF HEART DISEASE.

"IT PROVIDES GOOD GROUNDS FOR SCREENING PEOPLE OF SOUTH ASIAN ORIGIN WITH UNEXPLAINED HEART FAILURE AND SCREENING THEIR FAMILIES IF POSITIVE."

"HOWEVER, THERE IS NO EVIDENCE YET THAT EARLY DETECTION WILL LEAD TO IMPROVED OUTCOME SINCE WE HAVE NO IDEA IF THE OUTLOOK FOR THIS GROUP CAN BE MODIFIED BY CONVENTIONAL HEART FAILURE TREATMENTS."

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FAMOUS QUOTES

JAMES EDWARD OBERG (BORN 1944) (OFTEN KNOWN AS JIM OBERG)

HE IS AN AMERICAN SPACE JOURNALIST AND HISTORIAN, REGARDED AS AN EXPERT ON THE RUSSIAN SPACE PROGRAM.

AFTER SERVICE IN THE US AIR FORCE, HE JOINED NASA IN 1975, WHERE HE WORKED UNTIL 1997 AT JOHNSON SPACE CENTER ON THE SPACE SHUTTLE PROGRAM. HE WORKED IN THE MISSION CONTROL CENTER FOR SEVERAL SPACE SHUTTLE MISSIONS FROM STS-1 ON, SPECIALISING IN ORBITAL RENDEZVOUS TECHNIQUES. THIS CULMINATED IN PLANNING THE ORBIT FOR THE STS-88 MISSION, THE FIRST INTERNATIONAL SPACE STATION ASSEMBLY FLIGHT.

DURING THE 1990S, HE WAS INVOLVED IN NASA STUDIES OF THE SOVIET SPACE PROGRAM, WITH PARTICULAR EMPHASIS ON SAFETY ASPECTS; THESE HAD OFTEN BEEN COVERED UP OR DOWNPLAYED, AND WITH THE ADVENT OF THE ISS AND THE SHUTTLE-MIR PROGRAMS, NASA WAS KEEN TO STUDY THEM AS MUCH AS POSSIBLE. HE PRIVATELY PUBLISHED SEVERAL BOOKS ON THE SOVIET (AND LATER RUSSIAN) PROGRAMS, AND BECAME ONE OF THE FEW WESTERN SPECIALISTS ON RUSSIAN SPACE HISTORY. HE SPEAKS ENGLISH, FRENCH, AND RUSSIAN AND HAS USED HIS LANGUAGE SKILLS AND A FRIENDLY DEMEANOR TO GAIN ACCESS TO THE HEART OF THE RUSSIAN AND EUROPEAN SPACE ESTABLISHMENTS. (AS A RESULT, HE HAS OFTEN BEEN CALLED TO TESTIFY BEFORE THE US CONGRESS ON THE RUSSIAN SPACE PROGRAM.)

AS A JOURNALIST, HE WRITES FOR SEVERAL REGULAR PUBLICATIONS, MOSTLY ONLINE; HE WAS PREVIOUSLY SPACE CORRESPONDENT FOR UPI, ABC AND CURRENTLY MSNBC, OFTEN IN AN ON-AIR ROLE. HE IS A FELLOW OF THE SKEPTICAL ORGANIZATION CSICOP AND A CONSULTANT TO ITS MAGAZINE SKEPTICAL INQUIRER.

IN 1991, PBS TRANSFORMED HIS BOOK RED STAR IN ORBIT INTO A DOCUMENTARY SERIES. HBO HAS OPTIONED RED STAR IN ORBIT FOR SOME FUTURE MADE-FOR-TV MINISERIES.

HE WAS COMMISSIONED BY NASA TO WRITE A REBUTTAL OF APOLLO MOON LANDING HOAX ACCUSATIONS. NASA LATER DROPPED THE PROJECT; HOWEVER, OBERG HAS SAID THAT HE STILL INTENDS TO PURSUE IT.

"KEEP AN OPEN MIND, BUT NOT SO OPEN THAT YOUR BRAINS FALL OUT."