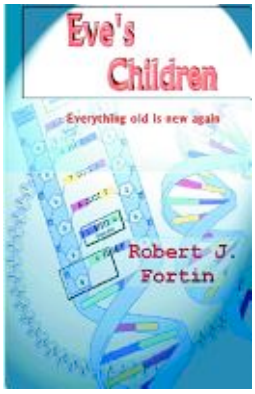

Genetic researchers, using DNA from ancient humanoids, are able to halt and reverse aging and many of its associated diseases. Financial backers apply pressure to market this discovery, but a fatal flaw in the genetic makeup leads to disastrous results.

Eve's Children

Eve's Children

Robert J. Fortin

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Medical science, genetic engineering and bio-genetics are making encouraging headway in anti-aging research and in finding cures for neurodegenerative diseases often associated with aging. Over 1/2 billion dollars are being spent in this field annually at research centers around the world. New discoveries are moving humankind ever closer to the goal of achieving a happy, healthy life span of 100 years and beyond. The scenarios in this novel depict one aspect of this intensive search and are based, in part, on actual research carried out at many different laboratories and at diverse locations. However, this novel is a work of fiction, and any resemblance of the names, places and incidents to real life characters or projects is entirely coincidental. For purposes of the story, the time spans for carrying out a research project of this type and scope are compressed, and the control of the genetic experiments depicted in the novel is atypical of the real world.

Eve's Children

PROLOGUE

The present

MaryAnne lay awake in the darkened room, dimly illuminated by the streetlight that reflected through the partially open blinds. Through tired eyes, she had been staring at the dancing shadows on the bedroom ceiling for almost an hour. The rain had lessened and now beat a steady rhythm, tapping lightly on the bedroom windows. It lulled her senses and sapped her will to stay awake. She was exhausted, had gone too many nights without sleep, but knew that when she closed her eyes, the terror disguised as a dream would return. It was so real; the smell of dank, rotting jungle vegetation, screeches and roars of unimaginable beasts, huge winged creatures swooping from the sky without warning, the guttural sounds of the strange, people-like creatures. People? They never spoke, just grunted and made faces while gesturing, hairy arms and hands cutting the air, punctuated with slapping motions to their sides and chests. Small, misshapen and covered with hair, they were quite ugly. Except for the children, their miniatures and unthreatening, each lovable in a way like the runt of a litter. These dream creatures had names like none MaryAnne had ever heard. Strange beings with strange names. Now she was beginning to recognize them, even to understand them. And what was most frightening, she could *read their thoughts*.

The dream had started, when? Three, four weeks ago? Little glimpses of disorganized scenes that grew and melded as it replayed night after night in her mind. She was certain that the injection she had received last summer had something to do with it. Without conscious thought, her hand crept to her hair line, fingers probing. They located the small indentation, almost healed, where the high speed drill had bitten into her skull, puncturing a hole just large enough for the long needle of the syringe. She shivered, and for a brief moment wondered whether the treatment that had saved her life would eventually frighten her to death.

Eyes burning now from lack of sleep, they fluttered closed. She stiffened, fighting sleep, then finally relaxed and went limp. As if on cue, the projector of her mind turned on, and the dream sequence unfolded anew.

Ab came awake with a start, realizing a dull pain in her lower back where the sharp edge of an angry rock had intruded during the long night. The shallow cave that had served as her bed was not much more than an overhang of rock, barely enough to protect her from the dense mist which now enveloped her. It was almost dawn, the sky lightening imperceptibly due to the fog. Her senses were immediately alert; clutching the crude club fashioned from the leg bone of a huge beast, she looked about, then raised her head and cautiously sniffed the air while listening for sources of danger. Hearing only the morning calls of the small winged ones, Ab rose and stretched. At full height, she stood barely five feet, somewhat taller than other members of her tribe. Her body was covered with a fine hair and her skin was lighter than most. Her blond hair immediately set her apart; it flowed in profusion over her shoulders and almost reached her waist It was matted now as she ran her fingers through it to rid it of the beaded mist and crawling things that had nested there during the dark time.

The hot, burning light would soon rise in the sky, making this another difficult day for Ab to expend the energy needed to find food. The thought of eating made her stomach contract and she grunted with hunger. Yesterday she had missed killing two of the furry creatures that lived under the ground, and her stone had not brought down the small one that lived in the sky. She had eaten only a few berries in two days and was growing weaker. Today she must find food, or would soon become easy prey to one of the many beasts with sharp teeth. She crept from her narrow shelter and scrambled down the rock outcropping. Before entering the surrounding jungle she paused at a broad-leafed plant and carefully tilted the collected dew into her mouth. She repeated this several times until her thirst was quenched. After squatting in the bush to relieve herself, she moved on.

Ab wondered if she would track down her tribe today and be reunited with her two small ones. They had become separated four darknesses ago while she was out foraging for berries and had been forced to climb into the tall growth to escape one of the long tooths. The beast had been relentless in pursuing her, and when it had finally given up on taking her, it was dark.

She knew that she could not risk the dangers of the night creatures while trying to find her way back to camp, so she spent the dark time in the tall growth. When she returned to the camp the next day, she found it abandoned. Her tribe was small, the grown ones numbering only three males and five females. There were eight of the small ones, two of them were hers, and she missed them. The tribe would take care of her small ones for a while, but if she did not return soon to care for them, they would be left behind.

Ab remembered how difficult it had been when she was small. She had come from Em, who had been captured by a tribe in the land near the Great Water when she was half grown. Em had been forced to hunt and forage for the tribe, and in return was given enough food to barely stay alive. The tribal leader, Ru, had crossed the Great Water on a crude log raft when he had reached his full size. Ru was taller and stronger than other tribe members. He had claimed Em as his property, and began mating with her as soon as she could bear small ones. The following year Ab was born.

The females of the tribe usually made a fuss over a new small one, touching, caressing and grunting encouragement to the mother. But Ab's birth agitated them. She was different, larger and with less hair on her face and body. Her skin was lighter than either Ru or Em, and she had inherited Ru's blond hair. Ab was shunned during her early years, and had it not been for Em protecting her, she would have perished.

Em taught her the ways of finding berries and fruits in the places of small growth. She taught her how to prepare rocks and bones for use as weapons, how to surprise and take the shiny ones that lived under the water and how to climb the tall growth and conceal herself while waiting for her prey to pass beneath. She taught Ab how to track these creatures and how to throw stones to wound them, then, when they were helpless, to crush their skull with a large rock or with her club. Em also taught Ab about the deadly attacks of other tribes and how to ward them off or hide from them. And about the large beasts that stalked them and the huge winged ones with sharp claws that swept down from the sky to seize the small ones. She taught Ab how to survive. Now, all these skills were needed if Ab was to ever see her two small ones again.

Suddenly she stopped and sniffed the air in several directions. The acrid smell of blood raised the hairs on her arms and neck. Her senses alert, she found its source on a trail leading into the growth. Cautiously following the scent, she came upon a tall, striped beast that had been wounded by the long tooth, but had somehow managed to escape. It was moving slowly, limping and in obvious pain. She kept it in sight, tracking it with great stealth as the bright light rose higher in the sky and warmed her skin. When the animal stopped to rest, Ab crept up on it, keeping the wind in her face as Em had taught her. The creature was too big to subdue with a sharp stone, so she leapt at it with her club, shouting the attack cry. The animal wheeled and rose on its hind feet, shrieking with fear and striking out with sharp hooves that narrowly missing Ab's head. Her club missed its target, but struck the shoulder muscles torn by the long tooth. The animal screamed and fell to the ground, thrashing wildly with fear and pain. Ab was on it in a minute, pummeling its head with her club until it lay motionless. With her cutting stone she quickly sliced through the throat then the soft underside of the thick hide, exposing the entrails. With cupped hands she caught the warm blood spurting from the severed arteries and greedily drank it. Then she sliced off and devoured chunks of the steaming flesh while smacking her lips and looking furtively about. She knew that she must hurry for soon the long tooth or great winged ones would arrive to challenge her for her kill.

"Oh, God!" MaryAnne cried out and bolted upright, clutching her chest. Harvey, who had been peacefully sleeping beside her, came awake with a start and quickly switched on the lamp on the nightstand beside the bed.

"What is it, MaryAnne, another nightmare?" he asked, grasping her shoulders and holding her close. "It's okay, now. Was it the same dream?"

Her heart pounded like it would explode from her body and she fought to catch her breath. After a minute she found her voice. "Oh, . . . oh, God, Harvey. It was so *real*. The blood, and the screams. I could *smell* it, Harv, I swear, I could smell it just like I was there."

Harvey held her at arms length and stared into her eyes. "Calm down, sweetheart. You're okay. It was just another dream. Nothing to worry about."

She shivered and started to sob softly. "Oh Harvey. Why does it keep coming back? What does it mean? Who are those creatures and why do I keep dreaming about them? Will it ever end?"

"Give it time, MaryAnne. You've been through a lot lately. We all have. Look, I'll leave the light on and you can just relax here in my arms. Can I bring you something? A brandy or a glass of water?"

She shook her head and snuggled close. He could feel her trembling through the sheet. He tucked the blanket about her, then lay back on his pillow. After a while, he closed his eyes. The rain that had been fingering the windowpane earlier had increased in intensity, and now he could hear the first traces of sleet tapping against the glass. It had been sleeting that day last Spring, almost seven months ago, when this all began. He wondered if he would ever know the full story. It involved so many people, some that he loved, and some who had tried to use him. Soon it would be over. One way or the other, it would end soon. Had it really only been seven months? It seemed an eternity. How could something that had started out so right turn into such a nightmare?

PART I

Seven months earlier

CHAPTER 1

Spring had arrived with fury that day, gusting down from Washington's bays and mountain passes with a mixture of rain and sleet, then rushing into northern Oregon where it rat-tatted against the tinted windows of GenAge Corporation's corporate offices. Research Director Harvey Mather interrupted his discussion with Senior Research Associate Wendell Carey long enough to watch the lines of tiny ice soldiers marching randomly down the pane. Dark clouds, pregnant with moisture, scudded across the morning sky. Harvey removed his horned-rim reading glasses, placed them on his desk, and then brushed a hand through his graying hair as he turned back to study Carey. Dell Carey was in his early thirties, a shade over six feet tall, with a slim build and a boyish grin. He wore his blond hair long, and a cowlick permanently graced his forehead. His casual dress reflected the style preferred by most young scientists in the lab. Harvey was aware that Carey had the reputation of being a 'fair haired boy' to the other researchers. One who always had new ideas and was ready to charge ahead and obtain backing so he could try them out. Shaking his head, Harvey folded his arms and let out a small sigh as he leaned back against the corner of his desk.

"I still think you're reaching a little on this one, Dell. How in the hell can I justify asking the Board for 800 grand to investigate what will likely turn out to be a dead end street?"

"That's just an estimate, Harv. I expect to build on the work we've done in fetal tissue and embryo stem cell research, so it could run less. If we're going to make breakthroughs in longevity and aging, we've got to try new approaches."

"But DNA manipulation? Environmental contamination of genes? You're proposing an experiment with an unproven scientific foundation.

You know how Cal's been bitching lately about controlling costs. I don't see us getting approval for research based on conjecture."

"Now wait a minute, Harv, it's a lot more than just conjecture. What about the preliminary results? They were damned promising."

"Sure, but it's a huge jump from using DNA from isolated lab animals to extracting DNA from old human bones. And what about the public? People are still uneasy about genetic engineering of plants and animals. How are they going to react when they find out that we're proposing to duplicate genes from humans who lived thousands of years ago?"

"I honestly don't see the problem, Harv. I expect when they realize that it's their ticket to longevity, they'll be damned glad to pay for the trip. We've known for years that sooner or later we'd be conducting genetic experiments on humans. There's no other way to prove that the approach works. Besides, we'll start with lab animals and take it a step at a time."

"Look, I don't want to seem too negative about this, Dell. I'll present your proposal at our Executive Committee meeting and if they agree that it has merit, then we'll go to the Board to request funding."

Dell uncoiled his large frame from the chair and stuffed his hands in his pockets as he strolled to the window, where he stared out for a moment as the bouncing sleet slowly covered the lawn in a white blanket. Then he turned, placed both palms on the desk and leaned towards Mather. "It *will* work, Harv. I feel it in my gut. We've been putzing around with far less promising research for almost five years and now the pieces are all falling into place. Get them to fund this project and we'll both be heroes."

"Is that what you want, Dell? To be a hero?"

"Hell, yes. Doesn't everyone? You've been in this business a long time, Harv. Look around. There are guys out there with no more smarts than us who are making serious money from genetic breakthroughs. All it takes is one big one and you're set for life. I'd like to make mine while I'm still young enough to enjoy it."

Harvey shook his head and stared at Dell. "We each have our motivation, I guess. If yours is to make a big score, then I wish you well. I know that

a breakthrough that will extend human life could be very significant, but on this project, I just don't share your enthusiasm. I'll give it a fair shake, I promise that, and we'll see what happens."

"That's all I ask, Harv. Give it your best shot." Dell smiled as he pointed towards the door. "Well, if there's nothing else, I've got a meeting with Jim Irwin."

"Before you go, I may have some good news on our stem cell project."

"Hit me. I could use a boost."

"I got a call today from Dr. Makey, a local obstetrician. One of his patients is apparently about to abort a fetus. I'm meeting with the couple tomorrow to discuss stem cell research, so we may have some new specimens soon."

"Hey, that's cool. I was beginning to think we'd have to put that project on hold. What's the age of the fetus?"

"Older than most, almost four months. Until recently he expected the pregnancy to go full term, but now he expects premature labor at anytime. Frankly, I'm very uncomfortable talking to the couple while they're going through this, but it's now or never. And we *are* desperately short of fetal tissue specimens."

"Tell me about it. What's the name of the young couple?"

"Winder. George and Betty Winder. And they're not so young. Close to middle age, I understand. It's a real tough situation. They've had several miscarriages, and it looks like this is their last chance."

"Do you think they'll agree to donating samples of their baby's tissues for our research?"

"There's a chance. I'll let you know after my meeting tomorrow."

The following day Harvey met with the Winders and explained how stem cells derived from tissues from their stillborn child could be used to combat Parkinson's and other degenerative diseases of the nervous system.

"So these cells from our baby could save lives?" George asked.

"It could extend and improve the life of those suffering from Parkinsonism and alleviate the symptoms, perhaps regenerate cell growth

in patients with other damage to their nervous system, so I guess you could say it would save lives."

"But why a fetus? Couldn't you use cells from an adult just as well?"

"Obtaining the cells could be fatal to a living person, and we're not sure how quickly the cells degenerate as the donor ages. The most promising approach so far is embryonic and fetal stem cells."

Harvey explained that only small samples would be needed from certain organs, and that after these were taken, their baby would be given a dignified burial at the cemetery of their choice. All expenses would be paid by GenAge, of course. Then he asked the Winders if they would be willing to donate their baby's tissues.

George glanced at Betty, who looked worried. After several moments of silence, he shook his head to indicate he wasn't convinced. "I'm sorry, Dr. Mather, but it's so hard to accept all this. You have no idea how tough it is to go through this."

"I understand," Harvey replied. "Why don't you sleep on it, and you can let me know in the next day or so. I'd like to leave this consent form with you, so if you decide to help us with this, you and Betty can sign it, have it witnessed and give it to Dr. Makey before Betty goes into labor."

The Winders agreed to contact him with their decision after they had given it further thought.

The large walnut conference table in the GenAge Board Room was equipped with the usual accouterments of coffee and water dispensers in the middle, cups, and a pad and pencil facing each seat. The five members of the GenAge Executive Committee were holding their quarterly meeting to evaluate results and directions of the company. In addition to Harvey Mather, the committee was comprised of Calvin Ryan, the 58 year-old President of GenAge and committee Chairman, John Tysworth, 51, company Treasurer; Marilyn Stiffey, 44, President of the First Union Bank of Maywood and McFarland Boyd, 41, a partner in the law firm of Winters, Boyd & Aiken and Corporate Counsel. The seat at the head of the table was vacant, awaiting Cal Ryan, whose secretary had preceded him and informed the other committee members that he would join them shortly.

"So what's happening with fetal stem cell research, Harv?" asked Boyd.

"Well, we've kept our hand in because it's an avenue that shows a lot of promise, Mac, and it's providing valuable insights into breaching the blood-brain barrier. But public sentiment is still running pretty high against it, so it may be some time before we have a marketable product."

"I've got a couple of clients who'd jump at the chance to buy whatever you folks come up with in the way of life extension. They wouldn't care if it came from ground-up puppy dogs as long as it gives them a few more years to count their money."

"I suppose a lot of people think that way, but they're not the ones writing their Congressmen or denouncing research from the pulpit. We have to play it very low key until there's a genuine breakthrough. With the aging of the population, I think the weight of demographics will soon be on our side."

Just then Cal bustled into the room. "Sorry I'm late, I wanted to catch Bruckner before he left for the day. The nine hour time difference between here and Bern makes for a short window of opportunity."

"How are things with our illustrious Chairman?" asked Tysworth.

"Impatient, as usual. He keeps reminding me that it's almost five years since we started genetic research on life extension, and he wants a saleable product yesterday. Anything new with the stem cell project, Harv?"

"I talked with the parents that I told you about who expect their fetus to be stillborn. I hope to hear from them soon, and whether they'll agree to donate tissues that will permit new avenues of investigation."

"What's this I hear about Dell getting excited over some new project?" asked Boyd.

"Yes, I'd like to hear more about that, too," added Cal.

"Well," Harvey said, rubbing his chin, "it's a new area for us, based on research that's been going on for 10 or 15 years at Emory University, Harvard Med School and other labs. They've conducted studies of aging characteristics and degenerative processes and how they are influenced by defects in oxidative phosphorylation, or OXPHOS. This comes under the general heading of mitochondrial genetics."

"What the hell is that?" asked Tysworth with a puzzled look.

"First, let me explain that during the present century there has been a dramatic change in life expectancy in advanced societies, and it now exceeds 80 years. As distinct from life expectancy, life potential is said to be at least 120 years, so that potentially we all might live an additional 40 years or more. One of the many factors limiting our ability to achieve our life potential is mitochondrial disease. Primary mitochondrial diseases can be due to mutations in either the nuclear or the mitochondrial genome, which can lead to defective OXPHOS, which produces adenosine triphosphate or ATP. This is the primary source of energy for numerous organs and tissues in the bodies of mammals, including the brain, heart, kidney, liver, muscles and the pancreas. So when this defect in OXPHOS occurs, these organs start to shut down and eventually stop functioning altogether."

"How does all that tie in with this research project that Dell is so hot on?" Cal asked.

"OXPHOS genetics is quite complex. As you know, our research to this point has been with nuclear DNA. For this project, we have to add the additional complication of mitochondrial DNA. MtDNA behaves entirely differently and mutates at a faster rate. I have copies of Dell's proposal here for all of you, and it summarizes what's been done, and what he proposes to do. But let me cut to the bottom line. No one is quite sure how mitochondrial genes became part of our cellular makeup. One prevailing theory is that they started out in bacterial form in prehistoric times and invaded the bodies of mammals. Then somehow, they developed into organelles or compartments in the cells, and then further mutated and evolved over many generations in reaction to the environment.

Nuclear DNA also changes over the life span of a mammal, but at a much slower rate than the mtDNA. Every cell in the body starts out with the same nuclear DNA, but as cells specialize in function, most genes are turned off. For instance, when a mutation occurs in a gene that causes a blood disorder, such as sickle cell anemia, it will have no effect whatsoever if that cell is not a primary part of the circulatory system.

However, mutations in mitochondrial genes caused by chronic poisoning of OXPHOS can have disastrous results, leading to optic atrophy, deafness, seizures and movement disorders. Also cases of asphyxiation and diabetes have been observed in laboratory tests on rats. These data indicate that, when ATP production falls below the minimum energy level required for oxidative tissues and organs to function, tissue specific diseases and even death can result."

"So you think Dell may be on to something," Cal observed. "What exactly is it that he hopes to accomplish?"

"There's evidence that the poisoning of OXPHOS increases as mammals age, due to present day environmental factors such as chemicals in the air we breathe and in our food and the water we drink. This reduces ATP production, which in humans can lead to many of the neurodegenerative diseases and symptoms of aging that I've described. Dell has extracted mitochondrial DNA from animals that have been raised from birth in strict isolation and under controlled conditions, and transferred this to animals suffering chronic OXPHOS poisoning. He's observed some reversal of late onset diabetes and marked improvements in movement disorders."

"Sounds promising, what's the next step?" Cal asked.

"Building on research conducted by others, Dell has shown a correlation between the degree of OXPHOS inhibition and chronic disorders. When clean mitochondrial genes were used to displace those contaminated by the environment, the disorders seem to improve. But even those clean genes still had the evolutionary mutations passed on by their mothers."

"Why their mothers?" asked Stiffey.

"Because mitochondrial genes are only passed on by the female of the species. Dell theorizes that the mitochondrial gene evolved and mutated over generations to suit its environment. These genes carried by all present day mammals are far more susceptible to toxins in the air and water than they were many generations ago, because our environment has changed dramatically over that time. And human life span has increased, providing more time for toxic contamination to invade our systems. It's his theory that early mitochondrial genes, if exposed to

today's environment, would adapt and build up defenses to toxins, making them less susceptible to rapid mutations as we age."

"Let me see if I've got it straight," Boyd said. "Some aging symptoms are caused by a reduction in ATP production in this mitochondrial thing. This may be due to the effect of the environment on these genes. So Dell wants to see if replacing them with genes that haven't evolved and mutated delays OXPHOS inhibition and the onset of aging problems."

"That about sums it up, Mac, except that he's hoping that it will both eliminate existing conditions related to OXPHOS defects and drastically reduce the onset of these diseases."

"Wait a minute. Where does Dell expect to get genes that haven't evolved?" Cal asked.

"He's going to solicit museums for remains of prehistoric animals that are closely related to present day mammals, then clone their genes for use as an uncontaminated source of mtDNA."

"Can that be done?"

"Perhaps, but we need to recognize the risks associated with the project," Harvey admitted. "I'm sure there are more than enough old bones lying around to satisfy all our present and future needs. However it may be difficult to splice these early genes into present day mammals. And there's always a chance that if ancient mitochondrial genes really did start out in bacterial form, then mutated, they may take on an entirely new form when introduced into modern day mammals, including humans. We may not be able to control the results."

"But there *is* a chance that it might work?" pressed Cal.

"I can't say with certainty whether it will. We just don't know. This whole field of research is still in its infancy. It could take a lot of time and money to develop it. I mean we're looking at a potential investment of many millions of dollars over years to investigate this. And even if it does work, what's the next step? Are we ready to bite the bullet and start experimenting on humans?"

"Now, just a minute," Cal demanded, "I don't think we can afford to ditch this approach until we've investigated it further. You mentioned others were working in the field of OXPHOS, so sooner or later there's

going to be a breakthrough. I can assure you that our European backers would be most unhappy to learn that we abandoned this because we lacked the determination to follow it through. I'd like to at least see if Dell is able to find uncontaminated DNA. Let's take a vote on this. Those in favor?"

"Before we vote, Cal, I'd like to go on record as saying that I'm not comfortable with this project," Harvey said. "I don't see how we can predict the direction this will take, or even whether we can control what it produces."

"So noted, Dr. Mather," Cal replied coldly, "now let's vote."

Predictably, Ryan, Tysworth and Stiffey voted to approve, while Mather voted against and Boyd abstained. Dell was authorized to commence searching for early mammal sources of mitochondrial DNA and if successful, to conduct experiments using it. Harvey was directed to prepare a detailed budget for the project for discussion at an upcoming Board meeting.

After leaving the meeting, Cal Ryan decided to stop by the research lab. As he passed the large, well-lit computer room, he looked with pride at the IBM mainframe, servers and peripherals. When they had purchased this equipment, it was considered state of the art, and had all the number crunching capability they envisioned was needed to conduct DNA assessments. But that was almost four years ago, and now they found it more efficient to tie into the University of Oregon Cray computer by ADSL modem or to one of the newer computers at other research laboratories. Still, this was the one part of research that Cal felt he understood as well as the scientists who worked there.

Cal stepped into the prep room outer air lock where he donned sterile shoe covers, a bonnet and a smock before entering the lab. This always made him feel like a surgeon about to enter the operating theater. In a way, the experiments carried out in the laboratory were advancing the frontiers of medicine, and he felt a certain pride in being a part of it. The GenAge laboratory was well equipped, reflecting the vast wealth and determination of the company's financial backers. Everything from

an electron microscope to atmospheric ovens was available to further the projects.

It had been difficult to convince the GenAge financial backers that all of this was necessary. Karl Bruckner, the Swiss financier who headed up the group, really drove a hard bargain. But then, once Bruckner was convinced that the equipment was needed, the funds were immediately available. And every time Cal had to "go back to the well" for more working capital, Bruckner had come through.

But lately, things were getting tougher. While Cal owned almost twenty percent of GenAge, the consortium headed by Bruckner controlled fifty one percent, with the balance spread among key employees. Bruckner, Chairman of the Board, had installed his own man, Tysworth, as Treasurer, and now they were placing stricter requirements on each new advance of funds. Cal knew that Bruckner was immensely wealthy, reportedly worth several hundred million dollars. The other consortium members weren't exactly starving either, thought Cal. But he suspected that they had bankrolled GenAge by tapping into their lines of credit at financial institutions throughout Europe and the Far East and so were anxious for a payback.

As Cal rounded a corner in the lab, he saw Dell Carey bending over a pipette at a lab bench.

"Ah, there you are Dell. Got some good news for you."

"Hi, Cal. I'm always ready for some good news. Is it about the Winder fetus?"

"Not yet, but this is about your proposed mitochondria project and studying the effects of OXPHOS. We're giving you the go-ahead to start gathering information and sources for mtDNA. Should be most interesting."

"Cal, you continue to amaze me. How did you learn about OXPHOS research?"

"Not as tough as you think. Dr. Mather filled us in at the Executive Committee meeting a while ago. I suppose I should let him tell you about it, but I wanted to get a read from you about your feelings on this project. As you probably know, Harvey seems rather negative."

"Yep, I'm aware of that, and he's got a right to be. We're on pretty shaky ground with this one. But I'm optimistic that it's worth pursuing."

"I have a feeling that we're running out of time to explore theories, Dell. We need to target our energies on something that can produce results in the near future. We can't ask the goose to keep laying golden eggs forever, you know," Cal said with a wry smile.

"Come on, Cal, we've been at this for less than five years. For research this important, that's less than a heart beat. Most companies take that long or longer just to get through FDA approval phases. Besides, I've heard that our 'golden goose' has very deep pockets."

"Probably, but I wouldn't want to be the one caught with my hand in them. Bruckner has a reputation of playing hardball when he has to. And believe me, he owns the bat, the ball and the whole damn park."

"So that's the good news?" Dell asked, smiling.

"Sorry, didn't mean to get off on a tangent. I just wanted to get a warm feeling from you about this OXPHOS project. What's your gut reaction about our chances of making this work?"

Dell looked thoughtful and scratched his cheek with a pencil before answering. "There are still several problems to be solved in extracting and cloning mtDNA from very old bones, and then finding a good way to transfer these genes to a living mammal. We've used lobal injection in the fetal tissue project, so we might attempt that to overcome the blood-brain barrier. And some interesting work in using plants as a cell growth medium has been carried out at Emory. But, assuming that we can solve these dilemmas, then I'm excited about the prospects."

"There's a lot riding on this, Dell. I don't need to remind you that not only our backers but also each of us has a substantial stake in the outcome. I think you see why we need to get cracking on this OXPHOS thing. And I'd appreciate it if you'd keep me directly informed."

"I always copy you on my reports to Harv."

"I know, and I want you to continue doing that, but on this one, I want to be the first to know when something promising turns up. We may have to move fast and use the resources of our Board of Directors. There's a lot they can help us with, you know, outside the normal channels. You do understand, don't you?"

"Sure, you bet. You'll be the first to know, Chief. And by the way, thanks for going to bat for me on this."

"Keep at it, Dell. We've all got faith in you. Oh, and when Harvey gives you the go-ahead on this project, try to act a little surprised."

CHAPTER 2

Harvey sat at his desk, re-reading Carey's project proposal. He was surprised and a little annoyed at the speed with which the Executive Committee had approved starting the mitochondria project. Earlier projects had taken months to get off the ground. They didn't even have a firm budget on this one, but it was full steam ahead. He felt very uncomfortable with that.

More than 25 years ago, when he had gotten his Doctorate in molecular biology, genetic research was pretty crude. Only a few labs were involved, most of those at universities. Harvey's early career was at the University of Chicago, conducting research on cloning DNA. His early experiments were with plants, in support of the school of agriculture. Farmers wanted disease-resistant crops, so labs produced them. Then they wanted higher yields, so labs gave them higher yields. Then they wanted to eliminate pesticides, so insect-repelling plants were produced. Finally, research money was available because a tangible return on investment could be seen. Plants were crossbred to produce new species with the desired characteristics, without much concern about where that was leading.

When genetics became pervasive in animal research, people got a little uncomfortable. Growing healthier plants was one thing, but fooling around with animals to produce more or larger offspring was getting a little too close to home. And cloning was a whole other story. What if something went wrong, they wondered, and those experimental animals got loose? A whole new generation of God knows what could be unleashed on the world. Or what if, heaven forbid, some crazy scientists started fooling around with cloning humans? Who knows? Bobo the two-headed boy seemed a distinct possibility.

Harvey had witnessed all those attitudes during his career, and was still excited by each new discovery. But he was also cautious. He insisted that a new project be divided into clearly defined stages, each having a specified goal and safeguards. Only when these had been satisfactorily

tested could it move on. The chances of making a mistake were myriad in his field, and he wanted to cut the odds of that happening. But now his department was about to rush into a new project without these safeguards in place. He would have to be twice as alert as usual. When everyone wants to go full speed ahead, someone has to keep a hand on the throttle and a foot on the brakes.

Dell strode out of the lab into the GenAge parking lot. Dusk was just settling in and he enjoyed watching the last vestiges of a brilliant sunset as the lights of Maywood winked on in the distance. Dell was a Beatles fan, and he whistled a verse from "Eleanor Rigby" as he deactivated the car alarm on his bright red Porsche 911 GT3. Only 52 more payments to the bank and it would be his.

His conversation with Cal was still fresh in his mind as he envisioned how his life would change if he should make a genetic breakthrough. He thought back to the years of struggling to get a degree from NYU. While working 30 hours a week and carrying a full course load, he had managed to make honors each semester. When he graduated Magna Cum Laude, his first choice was the Genetics program at Stanford, and he was accepted. Dell earned his Master's degree in one year, and his Doctorate in three more years. Those had been very lean years. He managed to cover his tuition with income as a graduate teaching assistant and with a student loan for which his Uncle Harry had cosigned. Dell was an only child and both of his parents had been killed in a plane crash when he was nine years old. Raised by his mother's brother, an undertaker in Topeka, Kansas, Dell still thought of Uncle Harry every time that he smelled formaldehyde.

Deeply in debt after college, Dell had started work at a pharmaceutical company as a research biologist. But he knew that someday it would all pay off. He decided to enter genetics research because he expected that vast strides would be made in that field during his lifetime and would present him with the opportunity to make some 'real money'. When GenAge started up five years ago, his former Stanford Professor was retained as a consultant. He convinced Dell that the company had all of the ingredients for success. He would be working

for Dr. Harvey Mather, seventeen years his senior, with a brilliant career record in research and genetics prior to joining GenAge. And the money certainly seemed to be there, although Dell wasn't quite sure where it all came from. They made him an offer he couldn't refuse, and now, five years later, he was a Senior Genetics Researcher. It looked like his time had come.

The Porsche slid effortlessly through gears as Dell turned onto the Interstate and headed across town. He clicked on the stereo, and chose a new Courtney Walls disk in the CD player. Time to mellow out, he thought. He checked the digital clock and decided to detour for a drink at the country club before heading back to his condo. He down shifted as he approached the exit ramp for Maywood Heights Country Club and took pleasure in listening to the engine wind up as his speed dropped from 65 to 35. The club was the "in" place for Maywood society and Dell was proud to have been invited to join the prior year. The parking lot at the club was slowly filling with the Friday evening crowd as Dell nosed his Porsche into a vacant spot. He entered the club through the huge stained glass and oak panel doors that guarded the ornate entrance hall and went directly to the bulletin board near the reception desk. After scanning the latest happenings, he wandered into the lounge.

"Hey, Dr. Carey. What's shakin'?" greeted Wally the bartender.

"Hi Wally. What's up, man?"

"Same old, same old. The usual?"

"Make it a double Wild Turkey manhattan, rocks, Wally. TGIF and all that."

Dell looked around the lounge and noticed that about half the members were wearing golf outfits. The nineteenth hole was where bets were paid and bragging rights established. At the far end of the bar, Dell saw Bob and Wendy Baylor. Bob was a local attorney and Wendy was in real estate. Accompanying them was a striking blond, just a shade under six feet tall, wearing a revealing mauve sweater and a short skirt. She looked familiar, but Dell couldn't quite place her.

"Here you go Doc," Wally said. "Double Wild Turkey manhattan, rocks, easy on the vermouth, with a twist."

Dell took a sip. "Mmm.. Wally, my man, you're a true artist. Say, who's the sweater with the Baylors?"

"You don't recognize her? I didn't either when she first came in. You remember Charlie and Trish Brown who used to be club members a couple of years back?"

"Sure. I played a few rounds of golf with Charlie. They moved to California didn't they?"

"Right. Some kind of oil deal off Santa Barbara. I guess the California sun agrees with Trish."

"Why's that? Oh, you mean *that's* Trish?" Dell asked with an awed expression. "Whoa! What happened to her?"

"She always was a looker. She had her hair cut short and dyed it blond. And it looks like she's been working out and dropped a little weight. That skirt and sweater don't do her no harm, neither."

"I'll say. Where's Charlie?"

"I hear they got a divorce about six months ago," Wally replied. "Trish is back here looking for a house."

"Hah. Leave it to Wendy to sniff out a sale."

"You got that right, Doc. So, been playing any golf lately?"

"Nah. Too busy, and the weather's been pretty shitty for the past couple of weeks."

Dell decided to check his answering machine for messages and patted his coat pockets for his cell phone before realizing that he had left it in his briefcase in the Porsche. He set his drink on the bar and wandered out to the public phones in the hall. His call determined that there were no messages that couldn't wait. As he hung up, he heard his name called.

"Dell. Dell Carey! I thought that was you in the bar. So nice to see you again!"

Dell turned and found himself face to face with a smiling, tanned and gorgeous Trish Brown.

"Trish! You look good enough to eat." Dell said as he gave her a brief hug and a kiss on the cheek.

"You certainly know how to turn a girl's head."

"Sorry to hear about you and Charlie."

"Bad news travels fast. He sure changed when we got to California. He felt he had to be Mr. Big Shot like all those phonies he was working with. This small town girl didn't suit him anymore. So here I am at the ripe old age of 29 ready for a new start."

"Ripe, certainly. But old, never."

"God, it's great to get a compliment from a real man for a change. I've gotten so tired of those California dudes. I decided to come back here to Oregon where a gal knows what a guy wants."

"A little cynical, are we?"

"Damn right. Something in the California air causes marriages to bust up and people to lose touch with reality. Buy me a drink and I'll tell you the whole sordid story."

They walked back to the lounge, where Dell retrieved his drink and ordered a dry martini for Trish. She followed him to a small table in the corner of the room.

"So, you seeing anyone lately?" Trish asked. "Scratch that. Definitely a dumb question. I've known you for almost four years and you always have at least one or two little dollies on the string."

"As a matter of fact, I am, Trish. But she's not around for the weekend, so I'm lucky to have run into a gorgeous woman."

"Mmm. Careful, Dell. You're playing with dynamite. My libido hasn't been stroked in so long it could be considered a dangerous weapon."

"Ha! We scientists laugh in the face of danger. We thrive on challenges. We exult while rising to the occasion. Bring on your libido. I'll stroke the little rascal until it smiles."

"I love it when you talk dirty," Trish laughed. "But be warned I'm not a cheap date. You're going to have to buy me dinner if you want to rise to this occasion."

"You're on. Then later I'll show you a view of Maywood that's incredible. Only glimpsed by a chosen few."

"You have a telescope in your bedroom?"

"Better. I have a hot tub on my roof."

It was dark when Harvey turned his Lexus sedan onto his street at the Belle Wood subdivision in Maywood. This was one of the older

residential areas in town, and had many large homes set back from the street. The Mathers had moved here five years ago when he took the position as head of research at GenAge. He enjoyed driving down the quiet, tree-shaded street with its well-manicured lawns and abundant gardens. As he approached his driveway, the light sensors turned on the yard lights, illuminating the drive and walkways with shades of yellow, green and red. The gardening crew kept the yard looking good during the growing season, but he still enjoyed puttering in his yard, although it seemed he didn't have much time for that anymore.

Their house was a two story French Provincial, with stonework enhanced by a gray slate roof. Now that their daughter Pele was grown and had moved out, it had more room than he and MaryAnne needed, but he really liked this neighborhood. Besides, they could afford it with his salary and MaryAnne's practice in geriatrics doing well. Another late night for MaryAnne, he observed as the garage door swung open and her sedan was missing from its usual spot. He entered the house through the kitchen and crossed the living room, glancing at the photos of Pele and MaryAnne on the mantle over the huge stone fireplace. For the hundredth time he thought how incredibly lucky he was to have two intelligent and beautiful women in his life. After mixing a drink at the corner bar and thumbing through the mail in the front hall, he climbed the winding stairway to their bedroom.

Harvey had just returned downstairs sporting slacks and an open neck shirt, when he heard the garage door open. Moments later, MaryAnne entered. She had a ready smile and the mature good looks of a woman who was sure of herself. Her brunette hair had only a trace of gray and was worn in a stylish pageboy cut. In heels, she was almost as tall as Harvey. Both MaryAnne and Harvey kept themselves in good shape through regular exercise, and at 49, she looked years younger.

"Hi Babe," Harvey said, smiling. "Decided to make a house call?"

"Hi yourself," MaryAnne responded, giving Harvey a kiss.

"How'd it go today? Any new and exciting developments at the old age homes?"

"I wish you wouldn't call them that, Harv. My patients aren't old, they're just chronologically challenged. Besides, when you and your cohorts get your act together, old age will be a thing of the past."

"How true. Speaking of which, that new project that I told you about that Dell has come up with using genes from prehistoric animals to combat oxygenation loss was approved by the Executive Committee today, so you may not have long to wait."

"Really? Where's he going to find prehistoric animals?"

"Knowing Dell, there are probably a few lying around his living room from one of his parties."

"Well, his dates certainly aren't prehistoric. That Doreen or whatever her name was that he took to the theater party couldn't have been more than 20. What does he see in women that age?"

Harvey smiled. "I'd rather not answer that. I'm going to freshen my drink. Can I get you something?"

"Whatever you're having is fine. I'm going to shower and change."

Harvey was busy for a few minutes stacking logs on the firedog and lighting a fire. Then he mixed two vodka martinis with a twist, carried them up to the bedroom and set them on the dressing table. MaryAnne was in the walk-in closet, with her back to him, wearing only panties. She stood with her hands on her hips, studying her wardrobe.

Harvey admired the way MaryAnne had kept her figure. After 26 years of marriage, she still looked almost the same as when they were dating. A little fuller around the hips and bust, but he found that exciting. He walked up behind her and gently wrapped his arms around her waist while he nuzzled her neck. The smell of her bath soap reminded him of the honeysuckle that grew behind his grandmother's house when he was a boy. MaryAnne smiled and leaned back into him.

"Why do I have so much trouble deciding what to wear?" she asked.

"No problem. I like it fine the way you are."

"Would you like me to fix something to eat, or are we going out?"

"Let's stay in, and I'll fix something. Are you very hungry?" His hands slid slowly upward over her small belly and then cupped both her breasts. He began gently massaging her nipples between thumb and forefinger. They responded immediately.

"Ravenous. Mmm ... I didn't have time for lunch today." MaryAnne closed her eyes, and placed her hands over his. "What did you have in mind, as if I didn't know?"

"Something simple like a chef's salad and my world famous omelet. How does that sound?"

"Wonderful. . . . Are we having dessert?"

"I thought we might start with that. In fact, I think I already have. Care to join me?"

Later, Harvey was busy chopping mushrooms and onions when MaryAnne, wearing a kimono and slippers, entered the kitchen and walked up behind him. "That was just what I needed," she said, giving his shoulders an affectionate squeeze. "You're so creative when it comes to making me feel wanted."

"Practice makes perfect," Harvey said with an affectionate smile. "The salad's ready and the skillet's hot. I've put some sparkling chardonnay on ice, so give me five minutes and we'll be ready to eat."

"Mmm. Chef Boy Harvey strikes again. I'll open the wine and set the table while you do the egg thing."

Moments later, MaryAnne appeared back in the kitchen, looking worried. "She's moved them again."

"Who's moved what?"

"Our cleaning lady, Mrs. Olson. She's moved the wine glasses. They're not in the bar. That's the third time this week she's changed things around. I need to speak to her about that."

Harvey turned from the counter and looked at her with a quizzical look. "Quit kidding around. You know they're kept in the corner hutch in the dining room."

A momentary look of confusion crossed MaryAnne's face. Then she recovered and smiled. "Right, I knew that."

During the meal, they were occupied with snatches of catch-up conversation about the housekeeper, the weather and a cocktail party at the neighbors on Saturday evening. Finally, Harvey sat back and stared across the room with a distant look in his eye.

"Penny for your thoughts."

"Oh, I was just thinking about our Executive Committee meeting today. Sometimes Cal can be so damned exasperating."

"What did he do?"

"It was just the way he pushed through Dell's proposal for mitochondrial DNA experiments."

"But you told me that the lab animals that he had experimented on have lost some of their aging symptoms. Isn't that reason enough to continue?"

"Yes, but now he wants to clone uncontaminated DNA from very old animal bones for further experiments. I'm afraid he's barking up the wrong tree, and I told him so. Cal has always trusted my judgment on these matters in the past, but now he's treating Dell like a boy genius. We're stretched pretty thin as it is, and I hate to see us galloping off in all directions."

"But what if Dell is right, and those old bones really do contain uncontaminated DNA? Can you afford not to give it a chance to see if it has merit? And why are you so upset with Cal? After all, it's his job to direct funds to promising avenues of research."

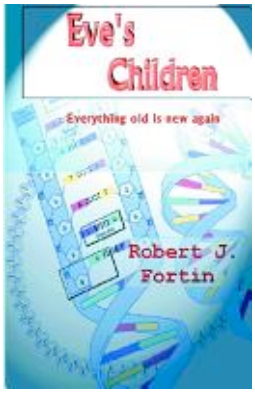
"You know that we have to keep a tight lid on projects, but how do you keep it confidential when you're out rummaging around for something as unusual as prehistoric animal remains? And Cal seems a little too anxious lately; everything has to be done yesterday. I'm afraid if we rush this, we'll lose control."

"Lose control? Is that what's really bothering you? You see Dell as threatening your control of research?"

"No, of course not. … Well, maybe. I don't know. Dell's looking for a quick score. He's admitted as much. That just rubs against the grain. Research is a slow, painstaking process. It has to be, or the results will be questioned and can be dangerous. I'm not sure that Cal Ryan and our Executive Committee fully appreciate that."

"Then you'll have to see to it that things are done right. Provide the checks and balances so no one will question the results. But you'll still need to keep an open mind. Dell might really be on to something, and if you rein him in too tight, you'll destroy his initiative."

"You're right. Guess I was having an attack of the green-eyed monster, worrying over nothing. Dell's a good researcher. He'll do just fine."



Genetic researchers, using DNA from ancient humanoids, are able to halt and reverse aging and many of its associated diseases. Financial backers apply pressure to market this discovery, but a fatal flaw in the genetic makeup leads to disastrous results.

Eve's Children