The Immortality Gene

by Jack English

Chapter: One Galanton

Pharmadyne Pharmaceuticals, Rutherford, New Jersey

"Greed is good. Isn't that what Michael Douglas said in the movie Wall Street?" Bladen Minnow asked. Minnow was a stocky fiftyish man with a square jaw and thinning hair. He was also the Chairman of the Board of Pharmadyne Pharmaceuticals. He sat at his desk looking past his visitor, out across the leafy suburb of Randolph, New Jersey, a town thirty miles west of New York City.

"What are you telling me?" Newton Stonefield asked. "That we haven't been greedy enough?" Stonefield was the President and CEO of Pharmadyne. A recent recruit from a Wall Street investment bank, he wore thousand-dollar suits and shirts with French cuffs. His cuff links were obnoxiously large and gold. Like Cassius, he had a lean and hungry look; he thought too much.

Minnow wondered whether Stonefield, a man he recruited, wasn't already angling to take his job.

Stonefield stood in front of Minnow's desk. He was holding financial projections. "Look, Bladen, we are in serious trouble here. We must do something."

Minnow played with his Monte Blanc pen but said nothing.

Stonefield thrust the financial projections toward Minnow, "Galanton comes off patent in eleven months. Galanton accounts for 60% of our sales. Neurova comes off patent eight months after that. It accounts for 30% of our sales. Unless we come up with a new, patentable drug fast, we are out of business. I do not want to end my days sleeping under a bridge, wearing a cardboard belt."

Minnow lay his pen on his desk and spun it around a couple of times. "Even after Galanton and Neurova come off patent, sales won't go to zero immediately."

Stonefield pointed east out the window. "Glencore is already working on generic versions of Galanton and Neurova."

Glencore was a generic drug company not three miles away in Morris Plains. You could see their building from Pharmadyne's roof.

Bladen Minnow, the founder of Pharmadyne, and Nathan Berlin, founder of Glencore, had history. They went to graduate school together and worked at Merck together. For a generation, their companies competed for investors, talent, and market share.

Minnow picked up his pen and put it back in the pen holder. "Newton, how far are you willing to go to save Pharmadyne?"

"All the way," Stonefield said. "I will do whatever it takes. But we must bring new, patentable drugs to market soon, or this company will be yesterday's news."

"I have a couple of ideas," Minnow said.

“Like what?”

“We could buy Glencore.”

“Would they sell?”

“Unlikely, but I already own 4% of their stock.”

Stonefield glanced at the financials in his hand. “It is not on the books.”

Minnow ran his fingers along the edge of his desk. “It’s a personal holding.”

“What else?”

“I’m looking at some orphan drugs that are still on patent,” Minnow said. Orphan drugs are drugs developed to treat rare diseases.

“That won’t do it,” Stonefield said. “Orphan drugs, by their very definition, have small markets. We need a blockbuster, something worth tens of billions of dollars.”

“I have one longshot idea.”

“What?”

Minnow swiveled his chair a little and cracked a tiny, knowing smile. “Have you ever heard of the Dublin Longevity Declaration?”

“No, what is it? Does it have something to do with climate change?”

Minnow exhaled in exasperation. “Earth is four and a half billion years old. Earth’s climate has been changing for four and a half billion years. Do you think buying electric cars and banning plastic straws is going to stop it?”

“How the hell would I know?” Stonefield spread his arms wide. “I’m a finance guy, not a science weenie.”

“You don’t have to be a scientist to stay informed. The Dublin Longevity Declaration is an international call to study how to reverse aging.”

“Isn’t that a little pie in the sky? How is that going to help?” Stonefield shook the financial projections he was holding in Minnow’s direction again.

“There is a pharma startup in South Jersey that has been buying large amounts of PF4.”

“What the hell is PF4?”

“Platelet Factor 4. Some research that shows it rejuvenates the old brains and makes them young again.”

“We sell PF4, don’t we?” Stonefield asked.

“I thought you didn’t know what it was.”

“I have no clue what it is or what it does. I just saw it mentioned in a sales report. So, this rejuvenation thing is probably just in mice, right?” Stonefield asked. “You can prove anything in mice, but it rarely translates to humans.”

“If they were only trying PF4 in mice, they would be buying microscopic quantities of it. The company I have in mind is buying a lot of it. I think they are in clinical trials.”

“Trials for what?” Stonfield asked. “To cure dementia?”

“I think they are trying to reverse the aging process. If it works, it could be worth half a trillion dollars.”

“What is it?” Minnow asked. “I mean, what drug are they testing?”

“I don’t know. Call it X. The bad news is this start-up might be under contract to another pharmaceutical company.”

“‘Might be’? What do you mean, ‘might be’?” Stonefield asked.

Minnow rested his forearms on his desk and leaned forward, “So, let me ask my question again. What would you do to keep Pharmadyne going?”

“When you ask ‘what would I do,’ are you asking whether I would work 24/7? Or are you asking whether I would kill someone?”

“I would like to think you would kill someone. It’s the romantic in me.”

“Thank you, Captain Renault. I hope that won’t be necessary,” Stonefield said.

In the movie Casablanca, Captain Renault suspected he could not return to America because he killed somebody.

“But you didn’t say no. You didn’t say you wouldn’t kill somebody.”

“What do you have in mind for this start-up pharmaceuticals company?” Stonefield asked. “Do you want to buy the company, or what? How far along are they? Have they completed any clinical trials? What will it cost?”

“Newton… Newton… Newton… you are full of questions.” Minnow tapped a memo on his desk, “My intelligence says they have been successful with a handful of people.”

“Are they for sale? And if so, how much?”

“My research…”

“You mean industrial espionage,” Stonefield interrupted.

Minnow swiveled back and forth in his chair. “One man’s industrial espionage is another man’s research. Anyway, my sources say the main investor is a hard-nosed cookie that would demand a king’s ransom for the company.”

“Can we offer them stock? I’d rather buy a company with little pieces of paper than hard cash any day.”

“My sources,” Minnow tapped the memo again, “say it would take so much stock that we might lose control of the company. You don’t want that, do you?”

“So, Bladen, what is your plan?”

“I thought we might hire away the company’s founder. It would be a lot cheaper than buying the company.”

“What about the others in the company? Wouldn’t they just carry on? Then we would have to worry about them beating us to key patents and filing for FDA approval ahead of us.”

Minnow leaned back in his chair. “The company’s founder has compartmentalized research so that no one knows the whole process. There is only one other scientist in the company that understands it.”

Stonefield stepped closer and whispered voice, “What are you going to do?”

Minnow looked up at him. “I am going to let Elaina Heller take care of any loose ends.”

Elaina Heller was Pharmadyne’s Vice President of Special Projects. Special Projects included lobbying, industrial espionage, and coercion. She did what was needed, when it was needed.

Stonefield placed his hands on Minnow’s desk and leaned forward, “What is she going to do?”

Minnow smiled up at him. “Do you really want to know?”

“No,” Stonefield sliced the air with his hand.

Neither Minnow nor Stonefield were interested in how it got done. They were only interested in the results.

Chapter Two: Go For Broke

Glencore Pharmaceuticals, Morris Plains, New Jersey

Nathan Berlin stood in his sixth-floor, Morris Plains office looking west toward Randolph, New Jersey. Berlin was also in his fifties, but he was tall, thin, and had a full head of sandy hair. He was the Chairman, President, and CEO of Glencore.

Laura Hunt, his confidant and expediter, walked up behind him, "What are you thinking, Nathan?"

"Pharmadyne is in a crack. If they cannot come up with a patentable drug in the next year, they are out of business."

"Do you care?" Hunt asked.

"Bladen Minnow beat me out of a scholarship when we were in school," Berlin said. "He took credit for research I did in graduate school, and he blocked my promotion when we were at Merck. This is not business. This is personal. Damned right I care."

Hunt was a blonde woman taller than Berlin. She wore a red suit coat over a white blouse and red pencil skirt. She put her hand on his shoulder and looked west with him. "But you have won. Glencore has twice the sales of Pharmadyne."

"And they have twice our profits. The problem with generic drugs is steady sales but low margins."

Hunt smiled, "Once the patents on Galanton and Neurova expire, you can step in and crush them. Game over. They pulled the plug on their Alzheimer's drug last week and they have nothing in their development pipeline to replace it. What are you worried about?"

Berlin turned toward her. “I’m worried that they will find a pharmaceuticals start-up somewhere with some blockbuster in the R&D pipeline and grab it.”

“Tony Van tells me Pharmadyne has been sniffing around Everly Labs, a South Jersey start-up.”

“What do they do?”

Hunt said, “Van claims the start-up is working on some kind of fountain of youth.”

“Is it a cosmetics company?” Berlin asked.

“No. It is a pharmaceuticals company.”

“Sounds like a scam to me.”

“Not according to Tony. He said they have good results,” she pulled her jacket down, straightening its lines a little.

“What kind of results? Animal studies?”

“Tony is being very cagey, but he hinted they have tried their… nostrums on a handful of senior citizens and the results have been remarkable,” Hunt said.

“How remarkable?” Berlin turned to face her.

“They worked a couple of eighty-year-olds and reset their biological clock to fifty; next step, reset their biological clock to thirty-five. Of course that is unconfirmed, and Tony is in sales, so to him everything looks bigger, brighter, and shiner than it is,” Hunt said.

“This scientist,” Berlin asked. “Who is he? What does he do?”

“His name is Roland Sinclair,” Hunt said. “He specializes in epigenetics.”

“What the hell are epigenetics?” Berlin asked.

“It has something to do with turning genes on and off.”

“Tell Tony to recruit him,” Berlin said.

“Why?”

“I am playing the long game here. If this Sinclair guy is a key player in Everly Labs, maybe we can bring him on board and see whether he has any patentably inventions.”

“Why?” Hunt asked. “We don’t do drug development.”

“If we get key patents on this epigenetic whatever thing, maybe we can block Everly Labs from bringing their product to market. Block Everly Labs and we block Pharmadyne. What do we know?”

“The company founder is one Dr. Arthur Everly. I plan to meet with him as soon as I can get an appointment. Maybe I can… persuade him to give us a little more information.”

“Including whether Pharmadyne is sniffing around?” Berlin asked.

“Especially whether Pharmadyne is sniffing around.”

Nathan Berlin put his hands on Hunt’s shoulders. “If this company is legit, we cannot let Pharmadyne get its hands on it. Do whatever it takes to stop it. Understand? And you know what I mean when I say whatever, right?”

Hunt smiled a crooked smile. “You mean I have a license to…”

Berlin put a finger on her lips and said, “Yes, 00 you do.”

Chapter Three: Brenda O'Rourke

Law Office of Jack English, Atlantic City, New Jersey

Jack English was banging away at a legal brief in his Atlantic City law office when Buick, his secretary, stuck her head in the door. She was holding a Cosmopolitan magazine in her hand. "Your ten o'clock is here."

"Who is it?"

"Brenda O'Rourke, Weymouth Forge Labs."

"Did she say what she wanted?"

"Ask her," Buick said and turned away.

"Can you get her a coffee?" English called to his secretary.

"Let her get her own coffee," Buick yelled from her desk.

Brenda O'Rourke was the founder, CEO, and majority shareholder in Weymouth Forge Labs, a two-billion-dollar pharmaceutical company. It was one of the largest firms in Atlantic County. She and Jack English had history. At one point, he accused her of manufacturing fentanyl for the mob and trying to kill him. But that was not quite what was happening. Someone in her firm diverted legally-made fentanyl to a local mobster. The mobster tried to kill Jack English when his investigation got too close to the truth. English squared things up with O'Rourke by saving her life when that very same mobster tried to kill her.

"One of your old girlfriends is with her," Buick called from her desk.

"Which one?" he shouted without thinking.

"Me," Dr. Erica Nilsson stood in his doorway.

Erica Nilsson was a tall, slender woman with mahogany-colored hair that just hung down over her ears. She never wore a speck of makeup because she was all business, all the time.

"Hi Erica. Glad to see you," he rose and stretched out his arms for a hug.

She stepped back and crooked her thumb over her shoulder, pointing toward O'Rourke.

"Brenda," he held out his hand.

She shook it. She had a good, firm handshake.

"What a pleasant surprise. Please be seated," he pointed to two wing chairs opposite his desk.

The women sat.

Brenda O'Rourke was an attractive, tallish woman ten years older than him. She was also tough as nails. If you can imagine a cross between Mareen O'Hara and a marine drill sergeant, you would have a pretty good idea of what Brenda O'Rourke was like. She was a force of nature as potent as any hurricane.

O'Rourke looked around his plain and simple office.

"You don't put on airs, do you?" she asked.

"I save everything for the courtroom," he smiled. "How may I help you?"

"I have been funding a research project and I'm worried that either the project is going nowhere or that if it is going somewhere, I am going to get cut out of the profits."

"OK," he asked, "what kind of project?"

O'Rourke extended her hand toward Nilsson.

"It is a longevity project," Nilsson said. "It is about how to help people live longer, healthier lives."

"Bullshit," O'Rourke said. "It's research on how to reverse aging."

“Is that possible?” English asked. “Isn’t aging inevitable?”

O’Rourke plopped a half inch thick, spiral bound document on his desk. “According to this, there is every reason to believe that most, if not all, the effects of aging can be reversed.”

English picked the document up and looked at the title, The Immortality Gene. “Is there such a thing as an immortality gene?”

“No,” O’Rourke leaned in, “well maybe. In 1993, Dr. Cynthia Kenyon found that a single gene mutation in a worm doubled its life span. The mutation was in a gene that controlled insulin metabolism. All higher lifeforms, even lawyers, have similar insulin metabolism. The discovery was a signpost that said, maybe, aging as we know it is not inevitable. Since then, there has been tons of research on aging. Enough research that a few scientists have suggested that aging can be reversed.”

English thumbed through the document, then glanced at its cover, “Who is Arthur Everly, MD, Ph.D.?”

“He is the guy doing the research for me. We have an agreement that if I fund his research, Weymouth Forge Labs gets 40% of everything.”

“Is he for real? Or is he a nut-ball?” English asked.

“As far as we can tell, he is for real. He references the Dublin Longevity Declaration several times,” Nilsson said.

“What is it?” English asked.

“It is a call to study how to reverse aging,” Nilsson pointed the spiral bound document. “Some very credible scientists have signed onto the declaration. So, no. He is not a nut-ball.”

English tapped the executive summary. “Does the Dublin Declaration mean other companies are working on this age-reversal thing?”

“I assume so,” Nilsson said. “Though no one has publicly claimed to crack age reversal.”

English closed the report and lay his hand on it. “So, Everly is in a race with other labs, maybe a few, maybe dozens. Has he found anything useful?”

“That’s what I am trying to find out,” O’Rourke said.

“Have you talked to him?”

“Yes.”

“What does he say?”

“He says everything is going as expected, but when I press him for details, he either gets upset or resorts to doctor speak so I can’t follow what he is saying.”

“Has he filed any progress reports?” English asked. “Has he done any presentations? Published any papers? Filed any patents? Does he keep records of his research?”

O’Rourke shifted in her seat and glanced at Nilsson. “He has filed several progress reports, all saying how great it is going to be when he finishes, but with little data. None of the reports are detailed enough to do me any good. And it has been four months since his last report.”

English leaned forward and rested his arm on his desk “May I ask whether this agreement was in writing?”

O’Rourke reached into a slim leather briefcase and pulled out a one-page agreement. She slid it across the desk to him.

He read it. “OK, I see where it says you are in for 40%. And I see that he is required to file progress reports. But according to this, he could satisfy his reporting obligation on a gum wrapper.”

“I know. He has been very cagey. That is why I am thinking about cutting off his funding. My outside accounting firm is pushing me to write off the investment.”

“How much have you invested?” English asked.

“$10 million with the promise of another $20 million if certain milestones are met.”

“What do you want me to do?” English asked.

“I want you to find out exactly what he is doing and make sure he doesn’t cut Weymouth Forge Labs out of the deal.”

“May I ask why Erica is here?”

“I am a scientist by training,” O’Rourke said, “but when Everly gets backed into a corner, he goes into doctor speak. I asked Erica to help translate.”

“Why did you come to me? There are dozens of lawyers who specialize in intellectual property.”

“You know my feeling about lawyers,” O’Rourke crossed her arms, “most are as useless as… Let us just say useless. I have talked to my patent lawyer, and talked and talked, but he doesn’t do anything. All he does is write memos in legal mumbo jumbo and bill me for them. You are not a paper shuffler. You know the law and you make things happen. I need somebody who can make things happen. So, can you help me or not?”

“Sure, why not?” He quoted her three times his usual hourly rate on the theory she could pay.

“Here is a twenty-thousand-dollar retainer,” she slid a check across the desk to him.

“A couple of questions, if I may,” English said. “First, where is he located?”

“His facility is in Mullica.”

“Next question, is Everly doing this on his own or are others involved?” English asked.

“He has a dozen people working for him,” O’Rourke flicked the back of her hand at him. “They cost me a fortune. Why do you ask?”

“If Everly is the only one who understands this age-reversal stuff, this immortality gene, and he gets hit by a bus, you are SOL.”

“SOL?” O’Rourke asked.

“Shit out of luck.”

O’Rourke counted off on her fingers, “The four main players other than Everly are doctors Cohen, Sinclair, Manos, and Wang. I would like to think that they could pick up the pieces if Dr. Everly were hit by a bus.”

“Brenda,” English said, “I am going to need you to sign two representation letters. One with the details of the engagement, fees, etc., and another representation letter which gives me authority to access his research.”

“Done,” O’Rourke said.

“Let me print them out.” English turned to his computer; found the appropriate forms; filled them in; printed them; and handed them to O’Rourke.

She signed them.

“Is there anything else?” English asked. Clients never tell their lawyers everything and most clients lie about the facts.

“There is one other wrinkle,” O’Rourke glanced at Nilsson, then back at English. “Arthur Everly is a doctor of gerontology.”

“A doctor who specializes in aging,” Nilsson said.

“Right,” English said.

“He has been treating patients at the Moss Mill Senior Living Center, which is also in Mullica.”

“So?”

“I’m worried that he has been experimenting on his patients. Specifically, I am worried about whether Weymouth Forge Labs has any liability for his experiments.”

“Do you know for sure he is experimenting on his patients?”

“No.”

“Do you suspect he is?”

O’Rourke glanced at Nilsson then said, “No, not exactly.”

“Did you tell him explicitly, not to experiment on human beings?”

“No. I figured… well he is a doctor. He should know the rules.”

English turned to Nilsson, “Erica, are you familiar with FDA guidelines?”

“Yes. I can bring you up to speed.”

“Has anyone at Moss Mill died?” English asked.

“It’s a senior living facility,” O’Rourke said. “Twenty people a month die there.”

“Are those death rates abnormal?”

“Define abnormal,” O’Rourke said.

“OK,” English exhaled. “Erica, we need to meet with Dr. Everly. Then we need to visit Moss Mill.”

The three of them stood.

O’Rourke stuck out her hand, “Thanks, Jack.”

He shook her hand.

Brenda O’Rourke was a big girl, nearly six feet, and she had a nice firm grip. She also had killer instincts. Only a fool would try to cross her. He hoped Dr. Everly was not a fool.

Chapter Four: Dr. Arthur Everly

"I'll call Arthur," Brenda O'Rourke said, "and tell him that you and Erica are on your way. Call me as soon as you find out anything, OK, Jack?"

"OK."

With that, O'Rourke left.

"Shall I drive?" English asked.

"Sure. Why not?" Nilsson said.

Jack English drove Erica Nilsson in his Porsche to Arthur Everly's lab.

"You look good," he smiled.

"You don't look half bad yourself."

She was not smiling exactly, but he could tell something was there.

"Is there anything new in your life?" he asked.

"Like what?"

"Anything. A boyfriend, perhaps?"

"Nobody special," she said. "How about you?"

"Nobody special," he said.

Nilsson said, "I had lunch with Sheila Gray the other day."

Sheila Gray was a high-end escort and sometime Jack English client. Nilsson and Gray met when a madman tried to kill them. They developed an improbable friendship.

"How is she doing?" he asked.

"Business is good. She said her retirement plan is on track."

Sheila Gray's plan was to work until she was thirty-five, then retire. English knew she already had several millions in stocks and real estate socked away.

“Here it is,” Nilsson pointed to a barn-like structure. “I must warn you, Jack. Arthur can be abrupt.”

“He is a doctor,” English splayed his fingers on his chest. “I am a mere mortal. So, I understand that allowances must be made. What is that old Spanish proverb — ‘With the rich and mighty, always a little patience.’ With doctors a little patience, too.”

English and Nilsson walked into a small, but neatly-kept, reception area guarded by a secretary.

Nilsson spoke, “Good morning, Mrs. Custis. This is Jack English, one of Ms. O’Rourke’s lawyers. She said she would call to let you know we were coming.”

“Good morning, Dr. Nilsson. Would you and Mr. English be kind enough to sign the visitors log while I get your temporary IDs?”

“Sure,” Nilsson said.

“How many people work here?” English asked.

“About a dozen,” Mrs. Custis handed Nilsson and English temporary ID badges.

“Should we just…” Nilsson pointed to the door to the lab. She knew it was locked and waited for Mrs. Custis to buzz them in.

“I better take you,” Mrs. Custis said and keyed in the combination to the laboratory door.

They followed her.

Mrs. Custis looked up and down the lab’s aisles and did not see him. “He must be in his office.” She led them there.

They found Dr. Arthur Everly behind his desk banging out something on the computer. His office was large but simple. A white board stretched across the wall behind his desk; it was covered in chemical formulae. The opposite wall was lined with filing cabinets. A hundred-

inch display loomed large over them. Stacks of computer printouts sat on the floor under the windows. There were two enormous computer screens on Everly's desk and documents spread out around the keyboard.

Nilsson knocked, "Dr. Everly. I'm here with Jack English, one of Brenda's lawyers. Brenda said she told you we were coming."

He looked around the computer screen. "Was that today?"

"Yes, doctor."

"Have a seat," he gestured with one hand, not taking his eyes off the display. "I need to finish this before I forget it." He keyed something into the computer.

English and Nilsson sat.

"I am sure he won't be a minute," Nilsson said.

English stretched out in the chair. "I don't care how long it takes. I am billing hourly. This all goes on the meter." He folded his arms and closed his eyes.

Twenty minutes later, Everly looked up from his computer. "What do you want?" He asked Nilsson.

Erica Nilsson stood and walked toward him. "Brenda hasn't gotten a progress report in nearly four months."

"I told the patent lawyer she sent last week everything there was to know. And I explained it to him last month when he came and the month before that. Didn't he pass that on?"

"All she got from him was a note that said you made no sense."

"Me? I made perfect sense. He kept banging on about claims and prior art, the difference between patents and other kinds of intellectual property. Honestly, I didn't understand half the words he used."

“He said pretty much the same thing about you,” Nilsson said. “This is Jack English,” she motioned toward him. “Brenda has asked him to report on your progress.”

“Doctor,” English extended his hand.

Everly shook it. He had a firm handshake and a good grip. Everly was about six foot two and one hundred eighty pounds. He wore a white lab coat. His thick black hair was barely combed.

At six foot four and two hundred ten pounds, English was bigger but did not tower over the doctor.

“What do you want to know?” Everly asked English.

“Brenda claims you can reverse aging. I didn’t know that was possible.”

“It is and it isn’t. It depends on what you mean by aging,” Everly said. “There are certain characteristics we associate with aging. Grey hair for example, loss of skin elasticity, loss of muscle mass, reduced bone density, I could go on. Aging, as conventionally understood, involves lots of bodily systems breaking down.”

“So, what are you doing?” English asked.

“There is lots of published data on aging,” Early said, “some good, some not so good. I have been following the literature for years trying to replicate the most promising studies.”

“Have you found anything useful?” English asked.

“You go right for the juggler, don’t you?” Everly said. He walked back to his desk and put two pictures on the display over the file cabinets. “What is the difference between these two men?”

English looked at the pictures. “Is it father and son? Or it is the same man, just taken at different dates?”

“The same man, but what is the difference between them?”

English shrugged. “I don’t know.”

“The man on the left is Howell Dickerson, a white male, five foot nine, age 82, with grey hair. You cannot see it, but he is a little stooped. He has lost muscle mass and bone density, and his skin has lost elasticity. The man on the right is also Howell Dickerson, a dark haired, white male, five foot 10 inches. He has the muscle mass and the boned density of a 50-year-old.”

“So?” English asked.

“The picture on the right is Howell Dickerson age 84, after my treatments.”

“You’re kidding!” English said.

“Do you have clinical data to back that up?” Nilsson said.

Everly placed his hand on his computer. “I have monthly height, weight, and other data on Mr. Dickerson right here.” He pushed the page down key on his computer. Two side-by-side images of a woman appeared. “On the left is Buelah Ward, Betty I call her, age 78, on the right is Buelah Ward, age 80. She no longer has grey hair, her skin has regained its elasticity, and notice her face is fuller and rounder. Her breasts are fuller and rounder, too.”

“What do you estimate her biological age?” Nilsson asked.

“Somewhere around 52.”

“Biological age?” English asked. “How do you measure a person’s biological age?”

“A person’s biological age is measured in terms of norms for different age groups. For example, the blood pressure for a heathy 50-year-old male should be about

124 over 77. But for someone 35, healthy would be 119 over 70."

"Is that it? Blood pressure?" English asked.

"You can see the results for yourself in the photos. But no, it is not just blood pressure. I look at blood chemistry, which changes with age, bone density, skin elasticity, and epigenetic changes. You know what epigenetics is, don't you, Mr. English?" Everly smiled like he just lobbed one over English's head.

"Epigenetics is control of gene expression, for example with methylation."

"Very good," Everly said. "That makes you a lot smarter than the last lawyer Brenda sent."

"I wouldn't even know that," English said, "if Erica hadn't explained it to me. Epigenetics is her area of research. I cannot say I know much about it. Socrates said knowing what you do not know is the beginning of wisdom."

"Bob Socrates," Everly said. "I know him. He runs the local deli. Do you want to know more about my research or is that it?"

"I'd like to know a lot more, though it is likely to go over my head," English said.

Everly pressed the page down button on his computer. "On the left is Jacob Kepner, age 80, on the right is Jacob Kepner, chronological age, 84, biological age 54." He pressed the page down key on his computer again. "On the left Anna Kolchak, age 84, on the right Anna Kolchak, chronological age 86, biological age 55."

"Are these people from Moss Mill Senior Living?" Nilsson asked.

"Yes."

“Obviously,” English said, “some heroic measures were needed to achieve these results.”

“Heroic,” Everly said, “I like that word. Yes, it took a lot of work to achieve those results.”

“Did your patients consent to the treatments, whatever those treatments were?”

“Yes. I have video consent to treatment updated every three months.”

“How long have you been experimenting on… or should I say, treating these patients?”

“Most of them for two years, a little longer for a couple of them.”

“So,” English said, “these patients gave consent at least eight times to participate in your experimental treatment.”

“Correct,” Everly smiled.

“How many patients tried your treatment other than these four?” English asked.

“Does that matter?” Everly asked curtly.

“Yes,” English smiled. “No ball player hits a home run every time at bat, no matter how good he or she is. Everyone strikes out occasionally.”

“I’m not sure how many people I have treated,” Everly said.

“Surely, a scientist of your caliber keeps meticulous records,” English said.

Everly stared at English.

“Doctor,” Nilsson said. “Can we just count the number of case files on your computer?”

“I don’t see what good that will do,” Everly flicked the back of his hand at Nilsson. “Anyway, I don’t have time for bookkeeping exercises. I am in the middle of cloning

a batch of genetically tweaked cells for a new experiment." He rose from his desk.

"Dr. Everly --- Arthur," Nilsson stood between him and the door, "Brenda is on the point of canceling your funding. She needs data to justify pouring more money into it."

"I showed you what I can do," he pointed to the hundred-inch display.

"She needs more, a lot more. Give me access to your case files and I will write a status report for you."

"You can't possibly understand what I'm doing," Everly said.

"Let me just summarize your case files, and if there is anything I don't understand you can explain it to me."

"I don't want you telling tales about me behind my back!" Everly balled up his fists.

"Let me summarize the data and draft a report. You can edit the final version. How does that sound? Besides, you said you were too busy to write reports. Let me," Erica Nilsson smiled.

Everly stood with his fists balled up for a moment, then exhaled. "All right. I'll give you access to my patient files, but you cannot copy or remove them from this building." He sat at his computer and moved copies of the patient files to a thumb drive. "Follow me." He took the thumb drive to a vacant office, plugged it into a computer and keyed in some more instructions. "This is an encrypted thumb drive. The files cannot be copied or printed, only viewed and only viewed on this computer. Any attempt to read this thumb drive on another computer will cause erasure of the files. Understand?"

"Yes, doctor," Nilsson said.

Chapter Five: Forever Young

Dr. Everly abruptly got up and left.

Jack English spread his hands wide, “What now?”

Erica Nilsson sat at the computer and rested her fingers lightly on the keyboard. “Now we analyze the cases and see what he has been up to. Take notes.”

English pulled up a chair and sat next to her. “What am I looking at?”

“This seems to be a directory of cases. Each case has its own subdirectory.”

“How many are there?”

Nilsson counted, “Eighty-four.”

“He said he had sixty-eight cases. Is he hiding something?” English asked.

“Would you be surprised if he has lost count?” Nilsson asked. “Let’s do our own analysis.”

“Four successes out of eighty-four tries are what? About 4.8%. That sounds like an epic fail to me.”

“Remember what they said in the Hitchhiker’s Guide to the Galaxy,” Nilsson said. “Things seem darkest just before they go pitch black. Pencils up. We are going to list the cases; the patient’s initial conditions; and the outcome.”

“You are the boss,” English said.

“I’m glad you like working for a woman,” Nilsson smiled a broad smile.

English raised an eyebrow and smiled a flat smile in return, “It has its rewards.”

Nilsson turned back toward the computer screen, “Ira Hair, age 79 at the time of intake.”

“Intake?” English asked.

“At the time they entered Everly’s tender care. Died age 80.”

“That’s not good.”

“Why?” Nilsson asked.

“I thought women’s life expectancy was, like, 83.”

“83 is an average. Let’s see how many of Everly’s patients outlive the average. We must also consider people’s health at the time of intake. This woman, for example, had a history of cardiac events.”

“Cardiac events?”

“She had double bypass surgery and two stents.”

“That’s bad?”

“It isn’t good.”

“Next case, Aaron Brickstone, age 84 at intake; age 87 at death.”

“Health problems?”

“Several. Take this down…”

~

In the end, they found that the average intake age of the people in Everly’s program was 81. Of the 84 people enrolled, 36 had died, 24 had a biological age in the fifties. Another 24 had only recently entered treatment and had biological ages in their early seventies.

Everly returned, “Well, Erica, did you find what you were looking for?”

“I’m beginning to understand where you are,” Nilsson said. “Why not just tell Brenda and be done with it?”

“I hate paperwork, and the other people she sent were complete assholes.”

“You mean the patent lawyer?”

“Especially the lawyer.”

English extended his hand toward Everly, “Since we agree that knowing what one does not know is the

beginning of wisdom; would you mind giving me the big picture on your research?"

Everly stared at English for a couple of moments, wondering whether he should waste time explaining things again.

"All right," Everly said. "And just so you know, Mr. English, I am not doing this for your benefit. I am doing this so that Erica understands." He bolted out of the office they were in and strode down the hall to his own office.

English looked at Nilsson, raised one eyebrow, and extended his hand toward the door.

They followed Everly to his office.

He pulled up a PowerPoint presentation. "Aging is characterized by a progressive loss of physiological integrity."

"You mean things stop working," English said.

Everly frowned and kept talking, "I am mainly looking at six areas.

"Genomic instability – DNA damage caused by smoking, drinking, or environmental factors.

"Stem cell exhaustion – stem cells can become any cell needed to repair the body. Over time the body loses the ability to create these universal cells and is less able to repair itself.

"Telomere attrition – telomers are end caps on DNA that keep it from unraveling. Each time a cell divides some of the protective telomers are shaved off. When they are gone, DNA loses integrity.

"Epigenetic alterations we have already talked about. Many come naturally with age. Reversing those changes might be one key to extending life.

“Proteostasis – protein folding. Unless proteins are folded properly, they don’t work.”

“Protein folding?” English asked, “Really?”

Everly frowned, “A lot of chemistry is based on the geometry of chemicals. Get the geometry wrong and things do not work. How well would your car work if the crankshaft was put in backwards?”

“OK,” English spread his hands. “I’m just asking. I think in pictures. You gave me a picture I can deal with. Go on.”

Everly continued. “Ordinarily, cells can fix folding mistakes. When they cannot, cells stop working and you get old.”

“Got it!” English said. “

“Cellular senescence occurs when a cell stops working but continues to exist. Ordinarily, the body identifies and eliminates non-working cells. But as people age, the elimination mechanism breaks down and non-working cells build up in the body. The non-working cells send out chemical signals that are like throwing sand into an engine. Results include chronic inflammation and autoimmune diseases. Did you get all that, Mr. English?”

“Ninety percent of that went over my head. How do you expect to tackle those problems?”

“Carefully; like I said before, there is tons of research on each of these areas. But it is like having a box of scrabble letters. It is my job to make those letters into words, or in the case of aging, to take existing research, find the holes, and knit it together into a clinical program.”

“Program?”

“Sure. If you want to reverse aging, you cannot do it with a single pill or a single genetic modification. It takes work on a lot of different fronts.”

English spread his hands wide as if to ask what the hell he was talking about.

Dr. Everly sat on the edge of his desk. “Do you know the story of the three blind men asked to describe an elephant?”

“I don’t know that one,” English said.

“One man grabbed the elephant’s tail and said ‘An elephant is like a rope.’ One man felt the side of the elephant and said ‘An elephant is like a wall.’ One man felt around the elephant’s foot and said, ‘An elephant is like a tree’. None of them had the whole picture. The aging process is similar. We see bits and pieces of it, but so far, no one has put it together the whole picture. That is why what works for one person might not work for someone else.”

Nilsson asked, “What is your goal?”

“Ideally, I would like to regress a person’s biological age to 35 and keep them that age indefinitely.”

“Wow! Is that possible?” English asked.

“Theoretically, yes. But thousands, maybe millions of factors must be tuned just right. My best results so far are to regress eighty-year-olds to their fifties.”

“How do you expect to wrangle the millions of factors you mentioned?”

“Artificial intelligence helps,” Everly said. “It’s not the whole answer, but it’s a useful tool.”

“What do you need to finish?” Erica Nilsson asked.

“More money, lots of it. And fewer people coming around asking questions about something they cannot possibly understand.”