HOW TO DEFEAT YOUR OWN CLONE

And Other Tips for Surviving the Biotech Revolution

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CLONING AND YOU

(and You, and You, and . . .)

Cloning, wow. Who would have thought? There should be a list of people who can and cannot clone themselves.

—TED DANSON

If I was a scientist, you know what I would clone? Hot dogs!

—WILL FERRELL AS HARRY CARAY, *SATURDAY NIGHT LIVE*

The biotech revolution encompasses a wide array of social, scientific, and ethical issues, but its most intriguing and controversial aspect is undoubtedly human cloning. Highly debated and frequently misunderstood, this is a subject that everyone should be more familiar with, particularly if the "revolution" starts heading downhill.

Geneticists have come a long way since the days of Mendel and his pea plants back in the 1800s, and the science shows no signs of slowing down. Laboratory cloning is relatively commonplace in government, academic, and industrial labs around the globe. Every day, scientists use these techniques to answer fundamental questions about life on this planet: How do organisms grow and reproduce? What are the uses and limits of stem cells? Which came first: the chicken or the egg? The answers to such burning questions may someday help us prevent cancer, spawn replacement organs in glass jars, and breed some really funky poultry.

The term clone is derived from a Greek word meaning "branch" or "twig," which refers to the horticultural process whereby a twig from a plant is used to create a new plant that is genetically identical to the original. At its core, cloning is the genetic duplication of a living or previously living entity.

If you were going to build a replica of your neighbor's house, you'd first need to understand how the original was built. Specifically, you'd need a copy of the original blueprints, plus the tools and knowledge to carry out those plans. Building a replica of your *neighbor* is no different. The process simply requires a *biological* blueprint, some very tiny tools, and a little scientific savoir faire.

DNA—A REALLY, REALLY COMPLICATED BLUEPRINT FOR MAKING PEOPLE (AND OTHER STUFF, TOO)

For any organism to develop properly, its biological blueprints must be followed precisely to ensure accurate assembly of a body with the correct number of fingers, toes, and nipples.

These instructions are stored in each of the organism's cells by a long strand of material called deoxyribonucleic acid, or DNA for short. To envision a strand of DNA, just imagine the longest chain you've ever seen; now imagine it being several million times longer. Each link in the chain is a single DNA building block called a nucleic acid, nucleotide, or simply, base. In scientific shorthand, there are four main bases, denoted as A, G, C, and T. A chain of DNA is merely an extended sequence of these bases, so a brief section of DNA might look something like this:

GGCTAGTAGCCGATTAGATTC

But how do we find any meaning in this sequence of jumbled letters? Each of us is like an enormous biological word search; there is order to the madness, but finding it demands a lot of persistence and an absurd amount of free time. Since most scientists don't want to spend their Sunday afternoons playing a billion-letter game of Boggle, we have computers do most of the grunt work. This thankless task involves reading through every nucleotide in a piece of DNA to find the "words" within, which we call genes.

A gene is simply a short arrangement of nucleotides that can be interpreted and converted by the cell into one of the many materials used for building an organism. These materials are called proteins. Setting aside a few special cases, every gene encodes for a particular protein, and every protein serves a specialized function for life.

Genes are first "transcribed" into an intermediary called ribonucleic acid, or RNA for short. If DNA is a blueprint, then RNA is a temporary photocopy of a specific piece of the blueprint that can be worked with briefly and then discarded. Imagine you need a door built in a single room of a skyscraper. Would you hand a worker the complete architectural layout to the entire building or simply give her specific instructions for the task at hand? A copy of the door schematics could be used to make a door not just once, but all over the building. When the instructions wear out or become unreadable, it's no problem—the original blueprints are waiting to be copied and handed out again. For example, a complete library of genes isn't necessary to make collagen protein; a single copy of a collagen gene will suffice. In this way, an RNA transcript is like a work order given to the rest of the cell for production of a specific protein. The actual transition from RNA to protein is performed by a complex system of molecular machines through a process called translation.

To recap, the path from genetic blueprint to biological material has two main steps: (1) DNA is transcribed into RNA; (2) RNA is translated into protein. This is how life works: if your body needs a particular material, it simply copies that section of the genetic code and starts cranking out the proteins. Seems simple enough, right? But the blueprints are massive, and the organization is nightmarishly complicated.

THE HUMAN GENOME—IT'S EVEN BIGGER AND MORE CONFUSING THAN YOU THOUGHT

According to current estimates, humans have approximately 25,000 unique genes scattered among twenty-three different DNA chains called chromosomes. And as if that isn't elaborate enough, the genes account for only 2 percent of the total genetic material; there's additional noncoding sequences between (and even within) each gene that make up the other 98 percent. Because these extra base pairs don't actually code for any proteins, they were originally thought of as "junk DNA"—nothing more than useless filler between the meaningful information. Imagine trying to read this book if, for every coherent page of text, we also included forty-nine pages of gibberish inserted at random. Not only would the book be fifty times longer, but most of it would read like the output of one of those infinities of monkeys and typewriters trying to replicate Shakespeare.

One woman's trash is another woman's treasure, and sorting through this so-called junk DNA is like rummaging through a waste heap; somewhere between the discarded foodstuffs and soiled mattresses lie the free auto parts and vintage casual wear. The tricky part is picking out the good stuff from the garbage. This vast wasteland of DNA is littered with scads of seemingly useless information: ancient defunct genes, artifacts left by genetic parasites, and spacer sequences with potentially no function at all. But other regions have uses beyond mere protein production: noncoding RNAs that assist with various tasks, gene-control elements that regulate transcription, and many sequences that may have yet unknown functions.

The entire collection of genes in an organism, along with all of the noncoding DNA, is called a genome. In humans it's more than three-billion base pairs long. Combine that with the fact that the whole thing is smaller than a pinpoint, and you have yourself a doozy of a biological instruction manual. Think you had trouble putting that bike together last Christmas? Imagine how hard it would be if the directions were hidden throughout every book in the ancient Tibetan literature wing of the Library of Congress. And you only *sort* of understand Tibetan. And the library is smaller than the period at the end of this sentence.

GENETIC VARIATION—BECAUSE CLOTHES DON'T MAKE THE MAN; GENES DO

While you wouldn't have any trouble telling the difference between the blueprints for a skyscraper and the blueprints for a suburban home, you might have more trouble telling a pair of blueprints apart if they were both for *different* homes, because the differences between the blueprints would be more subtle—How many bedrooms? How many bathrooms? Garage or carport?

Each organism, be it a tiger, butterfly, or ficus, is the product of its species' genome: a complete set of instructions for building tigers, butterflies, or ficus. As a human being, your DNA—the instructions for building you that are shared by every cell in your body—has a lot more in common with the

DNA of other human beings than it does with the DNA of another species. Still, we don't live on a planet filled with practically identical people. Enough genetic variation exists within humanity to distinguish one person from another. At least some of this variation is due to the fact that, though you share most of your genes with the rest of humankind, your version of any one particular gene may be slightly different from your neighbor's.

Look at how humans deal with booze: every man and woman carries several genes that code for a group of proteins, which collectively help break down alcohol. For a given gene, you might have the "lightweight" version, while your friend Steve has the "fraternity legend" variety. Your gene codes for a protein that does the exact same job as the protein coded for by Steve's gene, but due to differences in its expression or subtle variations between the actual proteins produced, Steve spends his Saturday evenings doing keg stands and beer bongs with no adverse effects (long-term liver damage notwithstanding), but you end up drunk dialing your ex-girlfriend after your second strawberry daiquiri. Extrapolate this kind of variation to the other 24,999 genes in your body and you have a lot of room for diversity. The human genome makes you human; your genome makes you *you*.

To understand how this genetic variation arises, you need to know a bit about the birds and the bees, or more specifically, the eggs and the sperm (if we just lost you, please refer to the young adult section for a more, uh, "appropriate" handbook). Remember when we said that every cell in your body has the same DNA? We lied. Like any good scientific principle, there are exceptions to the rule. Eggs and sperm (called gametes or germ cells by biologists) contain only half your DNA, so that when they fuse to form an embryo, the new child receives the correct amount of genetic material: half from Mom and the other half from Dad. This is why most children have facial features that resemble a cross between their two parents (and why those that don't end up on a "Who's Your Daddy?" segment of Maury Povich's talk show).

Shouldn't siblings look exactly alike? If every child receives half of Mom's DNA and half of Dad's, shouldn't each one be an identical fifty-fifty hybrid of his parents' genomes? The answer is obviously no, but for a very specific genetic reason: every person carries two copies of each chromosome—the twenty-three bundles of DNA that make up the human genome—for a total of forty-six in each cell. That means you tend to have two copies of each gene called "alleles"—one on each chromosome pair—and they're not necessarily the same version. For example, you might have a "lightweight" allele for an alcohol-processing gene on one chromosome, but the "fraternity legend" version on the other. Your actual tolerance depends on the combination of these two gene variants.

When it comes time for the body to produce gametes, your chromosomes pair up accordingly and then separate, each new egg or sperm receiving only one chromosome from each of the twenty-three pairs. Your egg or sperm has an equally random chance of receiving the chromosome with the lightweight allele or the one with sorority lush (along with the thousands of other genes accompanying that strand). Extrapolate this arbitrary partitioning to the other twenty-three pairs, and you'll discover

that a single genome can produce more than eight million unique gametes simply by shuffling chromosomes around. This means that the genetic code from two parents could theoretically produce more than seventy trillion different embryos. wow

Oh, and one more thing: when your chromosomes pair up, matching sections on the opposing strands can actually swap with each other, producing two entirely new chromosomes unlike anything found in the rest of your body. So that seventy trillion number was actually a bit of a lowball.

The math says there's just no freakin' way you and your older brother are going to look exactly alike, no matter how hard your parents try. They could spend the next ten thousand years gettin' busy and still not replicate that particular combination of DNA strands. On average, you will share about half of your genes with your brothers and sisters, and about a quarter of your genes with your first cousins. Your genetic relation to the rest of the world trickles off from there.

In the end, your genetic composition is governed by what your parents' gametes deal you in a game of three-billion base pair stud. So if things aren't working out in the hairline department, you know whom to talk to.

MUTATION—CHANGE IS A GOOD THING . . . SOMETIMES

While the blueprints for a house are typically unchanging, DNA strikes a delicate balance between being static and dynamic—a sort of Darwinian teeter-totter between survival of the organism and adaptation of the species. Start messing with the code and you may end up with some pretty confused cells working from nonsensical plans (our bodies need cellular co-operation, not chaos). But if nothing in the code ever changed, no new genes would ever arise and organisms would have a very limited ability to adapt.

The process by which the genetic code changes is called mutation. Potential mutations include single-base changes (like a C becoming a T), deletions (when code is lost), and insertions (when code is added). These mutations can occur through exposure to various mutagens (radiation, oxidative stress, etc.), mishaps in DNA replication when a cell divides, or even invasion by genetic parasites like viruses (which have the ability to insert their own DNA directly into your genome).

If a mutation occurs in the DNA of the cells that make up your reproductive machinery, this mutation can be passed along to your offspring. Most mutations are neutral: they don't noticeably affect the organism. Beneficial mutations give the organism an advantage, and are subsequently kept in circulation through successive rounds of breeding, so these mutations tend to stick around. Disadvantageous mutations are typically selected out of the population or are fatal to the organism right off the bat.

CLONING—THE BIOLOGICAL COPY MACHINE

In a world where perfection is unheard of and even adequacy is rare, we risk losing the occasional sublime combination of genes to the chaotic whorl of breeding. Only *cloning* can give us a precise genetic duplicate of a biological organism.

Take a drive through any modern American subdivision and

you'll notice that nearly all the homes are built from the same three or four standard tract housing designs. Voila! Architectural cloning at work. All that was needed was a copy of the original blueprints and some workers to replicate the design. But as we've already seen, it's not that simple for a complex living organism; you need a lot more than wood, concrete, and some drywall.

Imagine if a would-be cloner—we'll call him "Jimmy"—decides for some reason to make a duplicate of himself. In theory, all Jimmy needs is a copy of his own genetic blueprints and a biological device capable of building a new Jimmy from scratch. A hundred years ago, this might have sounded like science fiction, but the tools for genetic cloning are all around us; Jimmy simply needs to know where to look.

VIRUSES—NO-FRILLS ENTRY-LEVEL GENETIC DUPLICATION

Just like the plans for a house or a skyscraper, Jimmy's genetic blueprints are relatively meaningless until the instructions are carried out and the materials are organized in meaningful ways. Otherwise, all he's got is a useless pile of protein (if we only had a nickel for every time our high school gym teachers called us that . . .). To make a biological copy, Jimmy's going to need to learn how genetic duplication happens in the wild, so we'll start with the simplest version known to humankind: viral replication.

A virus is nothing more than a bundle of genetic material wrapped in a shell of proteins; the genes code for the proteins, and the proteins protect the genes. In terms of biological organization, this is as simple as it gets. But whether a virus is even "alive" is debatable. A virus is merely an infectious agent that can't reproduce on its own because it lacks the necessary machinery. Instead, a virus needs to infiltrate a more sophisticated organism and start using the available materials to make copies of itself.

A virus is a lot like an unwanted house guest. Some don't seem so bad at first, like the guy who crashes for the weekend on your pull-out sofa bed. The first night he's passed out and appears relatively harmless. But two days later he's still hanging around, and the next thing you know he's overloaded your washing machine and flooded the basement. In the virus world, these seemingly unassuming little visitors incorporate their genetic material into a host genome and may lay dormant for years before causing any noticeable problems such as AIDS. Other viruses are more like the ultimate party crasher who barges in uninvited, messes with all your stuff, and moves on when the booze dries up—except that the virus makes thousands of copies of itself and they all set fire to your house on the way out.

Irritating as they are, viruses are extremely good at one thing: creating genetic duplicates of themselves. Within the confines of a host, the viral genome is copied, a new protein shell is produced, and the parts are assembled into a new, identical virus. This process is simple only because viruses are so simple: they're outrageously tiny, use an extremely limited number of proteins, and may only carry a single piece of genetic material to be copied. Sure, it would be convenient if Jimmy could clone himself this way, but thank God he can't, or you'd

probably have a thousand little Jimmys playing kickball in your yard right now. Besides, it's best not to emulate a parasite.

MICROORGANISMS—YOUR GREAT-GREAT-GREAT-GREAT-GREAT-GREAT-GREAT-GREAT-GRANDMOTHER WAS AN AMOEBA

Unlike viruses, living creatures are composed of individual structures called cells, which include a cell membrane (or wall) and a genome housed within. Sounds vaguely similar to a virus, right? But a cell is much more elaborate, capable of copying its own DNA and making its own proteins—something that those freeloading viruses can't do on their own. Like every other organism on the planet, Jimmy is constructed from individual cells, and he's going to need a way to re-create these structures if he's ever going to make his fresh new Jimmy clone.

The simplest living organisms consist of a single cell and nothing more. These bare-bones creatures were the very first recognizable forms of life on this planet, including a particular group of microorganisms that we're all intimately familiar with: bacteria. While a virus is essentially powerless without a host to exploit, a bacterial cell can transcribe its own genes and manufacture its own proteins without additional help. A bacterium also has the ability to copy its own genome and divide into two identical cells—a simple cloning process termed binary fission or asexual reproduction (which is a lot less fun than sexual reproduction, but comes in handy if you can't find a date).

Unfortunately for Jimmy, he's not a single, enormous cell, and if he wanted to clone himself like a splitting bacterium, he'd need every cell in his body to simultaneously divide and reorganize into two identical Jimmys. As there's no known biological mechanism in place for this type of spontaneous human cloning, this is as unlikely as it would be painful.

MULTICELLULAR ORGANISMS—COMPLEXITY THROUGH TEAMWORK

While a single cell has the capacity to grow, adapt, and copy itself, it takes a complex organism to paint a picture, drive a car, or win the Stanley Cup. And frankly, this is what we really care about, because a clone of Wayne Gretzky is going to be a lot more interesting than a clone of the *E. coli* that gave you the runs last night. Most of the organisms with which we're familiar—plants and animals—comprise trillions of cells, each with a specialized function, all working together in concert. These cells are the fundamental building blocks of any complex biological entity, including human beings, and they interact to form the structures of our bodies. In order for Jimmy to copy himself, he'll need a way to re-create his uniquely intricate biological design, and the easiest way is to imitate the original designer.

Mother Nature assembles organisms much as people assemble buildings: the genome is the blueprint for the body, and cells are the miniature construction workers that carry out these plans. Every cell in the body holds an identical copy of the instructions, yet each cell has a specific role in building and maintaining the complete organism. Just as a house is an assemblage of various materials like wood, brick, steel, glass, sand, or mud, and specific parts like walls, roof, and doors, human bodies, too,

are built from the ground up using a bunch of organic bits and pieces. In both cases, the end product is a unique structure arising from a predetermined design.

In a living system, cells and proteins come together to form tissues, such as bone, muscle, or nervous tissue. These tissues combine further to make organs: complex structures, including the heart, kidneys, or brain. And on an even larger scale, organs combine to form biological systems, like the circulatory, digestive, or respiratory systems. As a whole, Jimmy is a highly organized collection of these various systems, which coordinate to keep him alive and functional; but bear in mind that all of this complexity arises from Jimmy's individual cells and the blueprints from which they work.

If Jimmy was "cloning" his house, he'd give a copy of the original blueprints to the construction workers, and when the job was completed, the contractors would collect their paychecks and move on. Sure, they might return to do some minor repair work on the siding or to remodel the kitchen, but unless Jimmy is very wealthy, they probably won't live in his broom closet, waiting to spring into action at the first sign of a blown fuse. Cells, on the other hand, reside in an organism's tissues, where they have a number of lifelong responsibilities: they expand the tissue during growth and development, repair it when injured, make new cells to replace those lost to age and damage, and participate in the specific function of the tissue. A muscle cell contracts or relaxes to help the body to move, a liver cell pumps out enzymes that detoxify the blood, and a neuron transmits electrical signals in response to various stimuli.

In the world of the cellular "builder," every cell holds a complete copy of the genetic blueprints, but each one "reads" those plans in a different way—a phenomenon called cellular differentiation. These differences between cell types are critical, because if every possible protein in the genome was always being produced in a given cell, that cell would be a chaotic mess. Instead, each cell in the body controls which parts of the genome are turned into RNA and which are not in order to specifically control what proteins it's making. A bone cell, for example, churns out mainly bone-related RNAs and has little need for muscle- or nerve-associated RNAs. In this way, every cell type in Jimmy's body is like a specially trained worker with a very exclusive skill set—each one different, but essential to the whole—just like the builders of a house. An electrician has neither the tools nor the know-how to install Jimmy's plumbing, and a plumber would be just as baffled by the wires behind his Sheetrock, but together they can build something greater than the sum of its parts.

Let's say the construction workers are building various parts of Jimmy's clone house. They're all given a complete copy of the blueprints, but each worker requires only specific bits and pieces to do her job. The roofer needs only the top part of the design and a particular batch of materials (shingles, nails, nail gun), while another worker might need only the floor plan and tools for constructing a bathroom. Each builder needs to know not only what features are required, but how many of them need to be built: Does the bathroom need one toilet? Two? Thirty-seven thousand? This is not a trivial distinction. The same thing is true of cellular builders: each one needs to know

what proteins to produce, how much of them to make, and when and where to make them in order to get the job done right. This variable gene expression is what differentiates one cell from the next, and is essential for maintaining the overall organization and function of a body. Without it, Jimmy (or his clone) might be just an enormous pile of skin cells, and that would put a serious damper on, well, pretty much everything.

The problem with trying to "rebuild" a complex multicellular organism like Jimmy based solely on his genetic blueprints is that the vast majority of cell types aren't competent to make the entire body from scratch. Jimmy can't just give a copy of his genome to a fat cell and expect it to make a new person; that cell is predisposed to making more fat. So instead of trying to recruit trillions of different cells and giving each one a copy of his DNA, what Jimmy really needs is a single cell that hasn't yet resigned itself to a particular fate. And that's where stem cells come in.

STEM CELLS—THE BODY'S JACKS-OF-ALL-TRADES

As a grown adult, most of Jimmy's cells are already fully differentiated into specific types like nerve, muscle, and bone, and for these cells, there's usually no going back. But stem cells are different—they have the ability to transform into a variety of different types depending on their current level of differentiation. The earliest and least differentiated stem cells are the embryonic stem cells—found in the embryo—which can theoretically become *any* cell type in the body. They can also divide into two identical stem cells, each with the ability to either divide again (like the "broomstick" scene from *Fantasia*), or differentiate toward a particular lineage.

When an egg and sperm first combine, the result is the ultimate stem cell: a zygote. All the other cells in an organism are derived from this one original cell. The steps from "single cell" to "baby Jimmy" could (and do) fill a catalog of textbooks, but the general idea is simple: the zygote first divides exponentially to make a cluster of embryonic stem cells. Some of these cells then begin to change and differentiate to form the early parts of the Jimmy fetus, while others continue to divide and replenish the stock. As the process continues, cell division allows the developing Jimmy to grow, and cell differentiation helps him acquire his Jimmy-ish shape. After nine months, a single Jimmy zygote has grown into a complete infant Jimmy—two arms, two legs, two eyes, and a boatload of necessary organs. The point is that complex organisms don't exist as a single cell, but they all *start* as one—a very special one—and this phenomenon is what will allow us to replicate the development of a specific individual.

NUCLEAR TRANSFER—A CLONE IS BORN

If a lone zygote can make a complete Jimmy from a single copy of his genome, then why not use that mechanism to make a *new* Jimmy (or several new Jimmys)? In nature, an embryo is formed through the chance meeting of a unique egg and sperm, the result of which is a zygote with a never-before-seen and never-to-be-remade genome. But the genome still exists for as

long as that organism's DNA remains intact, and re-creating a zygote is *much* easier than re-creating an entire person.

The technique for making a "copied zygote" is called somatic cell nuclear transfer, in which the nucleus (the part of the cell that holds all the DNA) of an unfertilized egg is removed and replaced with the nucleus from a somatic cell (i.e., any adult cell other than an egg or a sperm) from the organism to be cloned. To create Dolly, scientists took the nucleus from an adult sheep's mammary gland cell and transferred it into an enucleated egg from a Scottish Blackface ewe. The result was a single egg cell containing a complete set of genetic blueprints for making a copy of the original sheep from which the mammary cell had been taken. That cell was inserted into the womb of the ewe, where it developed naturally into the clone we knew as Dolly.

To clone himself, Jimmy would have to re-create this nuclear transfer process for a human: he would need an egg cell from a female donor (any healthy egg will do) and a nucleus from one of his own cells. After removing the nucleus from the egg and inserting the DNA from his own cell, the egg now has the genetic material that Jimmy's original zygote had and is tricked into thinking: it's time to make a new baby Jimmy. All Jimmy needs now is a surrogate mother willing to carry around his developing clone for the next nine months. (Good luck, Jimmy.) Ladies, at least you have the option to be your own clone's surrogate mother, although this will probably make defeating her even harder, what with all the emotional attachment.

While it's essentially impossible to precisely copy several trillion cells and piece them back together into something Jimmy-esque, it's far less difficult to make a single cell that's primed to remake Jimmy and let Mother Nature do the rest of the work. At the moment, there are still several technical, ethical, and regulatory hurdles to overcome in terms of *human* cloning, but the groundwork has already been laid in other species, which means that it's only a matter of time before Jimmy starts cranking out copies of himself into an unsuspecting world.

You may have a wiser head than Jimmy, and you may be inclined to think twice before cloning yourself, but that doesn't mean someone *else* can't clone you. Your body is the unique source of your genetic blueprints, but it's constantly shedding copies—skin flakes, a drop of blood, or even a single hair follicle can be enough to provide a complete, clonable genome. Anyone with a basic knowledge of molecular biology and the right lab equipment could theoretically obtain a copy of your genomic DNA. Once human cloning technology becomes a reality, these DNA thieves will need only a donor egg and a surrogate mother to release a copy of yourself onto an unsuspecting you.

NATURAL HUMAN CLONING—MOTHER NATURE IS NOT IMPRESSED; SHE'S BEEN DOING THIS FOR AGES

Many of our readers probably already know this, but for those who don't, let us set the record straight: identical twins are clones. Occasionally, when a fertilized egg divides to make more cells, those cells may physically separate, splitting into

two or more identical embryos in the womb. Because these embryos share the same genetic code and because the cells are still in the "embryonic stem cell" phase, the duplicated embryos start building from the same set of genetic blueprints, and thus identical twins are born: genetic duplicates traveling along parallel paths of development.

The neat thing about cloning is that it's essentially like twinning, but with the two twins potentially living on disjointed timelines. Before Dolly the sheep and the advent of reproductive cloning, if you wanted to clone yourself you'd have to make that decision as an embryo, which is quite a big decision to make during your first trimester. In the future, you'll be able to make that decision (foolish as it may be) whenever you want. Just remember that unless additional technologies are created to artificially age your clone, your genetic duplicate is going to start life as an infant no matter how old you currently happen to be.