

P.S.

Ideas,
interviews
& features ...

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Q and A with David Ewing Duncan

It's noticeable that the style and structure of your book are markedly different from the usual science fare. Do you find that your work as a television producer influences the way you choose to explain ideas and tell stories in your books?

Yes: it's forced me to be clear, articulate and economical with my language. Good non-fiction is like listening to someone tell you a great story that is intelligible, elicits emotions and hopefully changes you; television literally tells a story out loud, with images and sounds, which can be very powerful. One of the largest parts of the human brain is devoted to vision and processing what we see, so this aspect is very important to us. I've always been a visual and sensory writer – creating scenes that I hope readers can see in their minds. Working in television has helped me to better shape descriptions and expressions on characters' faces and other visuals.

One thing that struck me when I read Masterminds was that none of the seven central characters you focus on embodies what's historically been seen as a key element of genius, which is that genius works alone. Do we need a new definition of the term to explain what makes your seven men and women special?

Science in our era is a blend of an individual's vision or intuition, and collaborative effort. Few major discoveries or breakthroughs in modern times are the result of a genius

working alone, like a Copernicus scanning the stars at night in his tower, although I do think that ideas tend to start with a brilliant insight which is sometimes contrary to common wisdom, and even heretical at times. The original ideas of Cynthia Kenyon about a gene that can increase lifespan were dismissed as phooey in 1993; now they're the basis of dozens of labs and several companies. Craig Venter, too, is a maverick who relishes upsetting dogma. Luckily for him, his innovations have sometimes proven to be so crucial that his critics and those he upsets have no choice but to acknowledge his achievements – even if they do so grudgingly.

Only one of the seven scientists in the book is a woman. Do you agree with Susan Greenfield when she says that the frontiers of biotech aren't welcoming to women because it's 'a particularly savage world ... a particularly alpha-male type of environment'?

Science among men is very competitive, and can be brutally so. Anyone, male or female, needs to be tough and resilient in its upper tiers. None of my subjects are betas, they are all alphas. But the one woman profiled at length in the book, Cynthia Kenyon, is not overtly alpha – she likes being a woman, and is comfortable being feminine in the way she dresses and behaves. She is nurturing to her students and often to her colleagues, even though she is also very ambitious and ►



LIFE at a Glance

BORN

Kansas City, MO, USA.

EDUCATED

Vassar College,
Poughkeepsie, NY, BA in
English Literature.

LIVES

San Francisco, CA, on top
of a cliff overlooking the
city.

CAREER TO DATE

Author, journalist,
television and radio host,
correspondent and
producer, director of a
non-profit institute.

FAMILY

Three children of my own
– Sander, Danielle and
Alex – and three more
children belonging to Lisa
Conte, my girlfriend; her
kids are Bobby, Maddy
and Tesse. (Yes, it's the
Brady Bunch). We have
joined families in the
house on the cliff, with ►

Q and A *(continued)*

◀ competitive, and can get as feisty as anyone if her work is challenged.

You believe that we should all understand what's happening at the forefront of the biotech revolution, but if you had to choose one factor that's inhibiting this discussion what would it be?

Fear. We non-scientists have a love–hate relationship with science and scientists. We love the gadgets and the miracle treatments, but we're suspicious of a group of very smart people who are, after all, tinkering with technologies and discoveries that can either save us or destroy us – or perhaps do a bit of both. Scientists are constantly causing profound changes, and people, by and large, fear change, even if it results in a better life. It doesn't help that scientists are like the priesthood, speaking their own language, with long initiation and training rites (PhDs) that set them apart from everyone else.

The scientists themselves fear that the public will take away their labs or hinder them out of ignorance. This state of mutual suspicion needs to stop because we risk, on the one hand, having scientists push us too far down a road that we would rather not travel upon because we are ignorant, and, on the other, scientists being shut down or their funding cut off by people who don't understand what they're doing. A discussion needs to take place, with the scientists communicating better, and the public more willing to understand. The media has been abysmal in facilitating this dialogue, opting

most of the time for sensationalism, although I see some small progress.

Of all the work that you've encountered during the writing of Masterminds, what has excited you the most? And scared you the most?

The ability to rewrite the basic programming of life both excites and scares me. It's exciting because we can cure maladies and perhaps change ourselves in useful ways; it's frightening, though, because we don't really know what we're doing, and we might make some monumental blunder. In the last chapter of the book, 'What if Frankenstein's Monster Had Einstein's Brain?', I suggest that Victor Frankenstein's major problem wasn't that he was experimenting with electricity to revive formerly living tissue, it's that he botched the experiment by using the brain of a madman. What if he had used the brain of a genius and the face and body of Orlando Bloom?

In Masterminds you point out that the National Human Genome Project gained momentum in the late eighties when senators were looking for big science projects in the waning days of the Cold War. But the interaction between scientists and politicians, particularly when it comes to funding, hasn't always been so easy: why not?

The critical year for the US was 2001, when President Bush restricted the use of federal funding for stem cell research. This was a political move by a conservative president ►

LIFE at a Glance
(continued)

◀ six kids ranging in age from eight to nineteen, and a Jack Russell Terrier puppy named Brownie.

Q and A *(continued)*

◀ to appease his core constituents on the religious right. Most Americans, like most Brits, want to move ahead with stem cell research, but it has been blocked over here while the Blair government actively encouraged a political process to educate the public and to create a strong set of regulations to keep the research safe while allowing it to move forward. The current US administration has done a great deal of damage to science and scientific objectivity by pushing an ideological agenda that has ignored scientific facts when they were inconvenient.

For those who don't ignore the inconvenient facts, the discoveries of science, as you point out in the book, have largely put an end to the belief that there is something mystical in the human species, or something divine at the heart of a cell that brings it to life. But when it comes to those operating at the forefront of the biotech revolution, are there benefits to having a few believer-scientists like Francis Collins around, a few more people who, as he puts it, combine zeal with knowledge?

About half of all PhD scientists in the US believe that a deity had a hand in creating the universe, though they also believe in science and evolution. Collins's brand of evangelical Christianity chooses to see the majesty of God in genetics and new discoveries, which seems reasonable to me if one is a believer. But of course, Watson is a believer too – he believes in atheism with all the fervour and dogma of a believer in God.

So scientists are not immune from needing a system of beliefs they can use to approach the world. I like the idea of them having a moral, perhaps even a spiritual, framework – the worst thing is for scientists to be cold, calculating geniuses whose only belief is in their own brilliance.

The book provides numerous examples of how the biotech revolution is surging forward, but we seem to be lacking a corresponding regulatory framework. Is it inevitable that governments will need to step in sooner or later? And will access to this new technology create new divisions between the haves and have-nots in society?

Government is not keeping up with the pace of possibilities and change. Britain did a good job with regulating stem cell research, but that's an exception: the US and many other countries don't even have a law banning human reproductive cloning because such a law has been blocked by the religious right who also want to ban cloning for stem cells. They refuse to ban one without the other. This is ludicrous, since few scientists want to clone people. In some cases, we're having the wrong debate – in the US, the issue in Washington has been stalled with the question of 'Should we allow stem cell research, or ban it?' Like most new science it's a moot point, because the technology exists: it is a genie that cannot be put back in the bottle.

The real question is what do we do with this new science? How do we make it work for us in a safe and ethical way? Then ►

TOP TEN *Favourite Authors*

Ernest Hemingway

Ray Bradbury

William Shakespeare

Joan Didion

Paulo Coelho

E. O. Wilson

E. E. Cummings

Herodotus

F. Scott Fitzgerald

Barbara Tuchman

Q and A *(continued)*

◀ again, the religious right should not be dismissed as loonies – they are an extreme example of a fear that is natural and probably useful up to a certain point.

As for who gets the wonder treatments, I think we already know the answer. About a billion people on earth right now have access to the current wonder drugs and medical treatments – the other five billion don't. ■

A Writing Life

When do you write?

Books and creative journalism are best in early morning, up until lunch time. I research, write scripts and such in the afternoons.

Where do you write?

I am a peripatetic writer – I have a desk at home with a view of San Francisco Bay where I start out in the morning, then I shift to one of several cafés, then to my office at the SF Writers' Grotto – a collective of writers downtown.

Why do you write?

Because it activates certain endorphins in my brain. Writing is a better drug than any other – at least when it's going well. I am a crusading sort of writer: I get my dander up about something, and I want to know more about it, and to try to get other people fired up, to hopefully move people to rethink something, or just to think. Ignorance is the enemy, and we are surrounded!

Pen or computer?

Outlines and notes with pencil and paper, prose and everything else on a computer.

Silence or music?

Music, 80 per cent of the time.

How do you start a book?

I think about it and make notes long before I start writing; then I write a prose outline that runs to 50 or 60 pages and blocks out the book. ►

A Writing Life (*continued*)**◀ And finish?**

The finish is intensive – long days with a daily word count that I try to make each day, usually 1000–1500 words. I'm exhausted at the end, and feel as if I age a few years each time.

Do you have any writing rituals or superstitions?

Procrastination extends to my entire house and office, which I organize and straighten before a writing session. Then once I'm into it, the house and office go to pot – papers everywhere, a complete mess. I've learned over time that the procrastination is less a stalling mechanism than a time that is necessary for my brain to stew over the writing, a process that helps the ideas organize themselves in a way that actually makes the writing more efficient.

Which living writer do you most admire?

Paulo Coelho perhaps, Ian McEwen, Joan Didion, David McCullough.

Which book do you wish you had written?

Shakespeare's sonnets; *In Cold Blood*; *One Hundred Years of Solitude*.

What or who inspires you?

The strange capacity of humans to occasionally rise above pettiness, selfishness and greed to soar with an idea, a poem, a song, or an innovation that changes everything.

If you weren't a writer what job would you do?

Be a secret agent or a musician.

What's your guilty reading pleasure?
Historical atlases and science fiction. ■

The Greatest Story in Human History

by David Ewing Duncan

If you have read this book and you still wonder why we should pay attention to these masterminds of science, allow me to ask you three questions:

1. If a pill existed that would prolong lifespan and slow ageing, how many years would you want to live?

- A. 100 years B. 150 years C. 200 years
D. 500 years

2. If it were possible, would you want to enhance the memory, strength and agility of your children and yourself?

- A. Yes B. No

3. If a method were devised to make people perpetually happy with a pill, would you take it?

- A. Yes B. No

There are no right answers, though it's likely that within twenty or thirty years the scientists in this book or others will give us the option to live longer, enhance our brains and muscles, and bundle limitless happiness in a tablet. The question is: do we want these things?

I suggest that one way to understand the breathtaking possibilities being offered up by Doug Melton, Cynthia Kenyon and Francis Collins is to get to know the masterminds who are creating these extraordinary new

possibilities. Reading these pages, you get a glimpse into their personalities, life stories and motivations which are as crucial to understanding their work as knowing about the life of Julius Caesar is to comprehending why he conquered Gaul.

Yet even as society provides these scientists with lavish resources to tinker with life itself, most people still know more about Paris Hilton than they do about the masterminds of science, despite their enormous power to create wonders and, if something goes wrong, horrors.

Modern civilization exists because of science, yet few non-scientists can name two leading molecular biologists. Most would not be able to define molecular biology itself, an admittedly drab term for something as important as the study of what goes on inside every living thing at the level of molecules. Imagine if the world's press and most of the public ignored the Prime Minister of Great Britain or the President of the United States because they couldn't be bothered to learn about major world events, despots and terrorists.

Most non-scientists, including editors and producers in the media, often see science as eye-glazing stuff that conjures up tedious afternoon classes in high school involving noxious chemicals fizzing in test tubes and mind-numbing Latin terms for plants and animals; many individuals I work with ►

The Greatest Story *(continued)*

◀ have told me that science is just not interesting to their readers – or that they already did their science story for the month. Indeed, where it is reported, an inherent tension exists between the media's need to report breaking news with banner headlines and the nature of scientific research, which tends to move in increments. And when breakthroughs do pop up on the front page or the evening news, the scientists usually get a quick, throwaway description, with journalists treating them as secondary to the science.

Scientists have a deserved reputation for being boring and talking in an unintelligible science-speak. Many of them also prefer anonymity, either by nature or because they don't want to be scrutinized too closely by non-scientists who they feel may not understand their work. But many top researchers are talented communicators: charismatic and quirky, they have outsized personalities and fascinating life stories that are at least as interesting as the sex life of a screen idol or football player, or Oprah Winfrey's latest diet.

Science historian and journalist Horace Freeland Judson has written that the personality of scientists 'has always been an inseparable part of their styles of inquiry, a potent if unacknowledged factor in their results'. Indeed, no art or popular entertainment is so carefully built as is science upon the individual talents, preferences and habits of its leaders. We are sitting on perhaps the greatest story in human history – a species is about to

self-evolve, to tinker with its own basic programming in way Charles Darwin never imagined. Shouldn't we get to know the tinkerers so that we can marvel at their accomplishments – and keep an eye on what they're up to? ■

Read on

If You Loved This, You Might Like ...

***The Selfish Gene* by Richard Dawkins**

In 1976 *The Selfish Gene* kick-started a revolution in the way we think about ourselves; thirty years on, it's still an international bestseller. Dawkins argues that we are no more than a throwaway mechanism to aid the survival of our genes, and his theories remain controversial today.

***Genome: The Autobiography of a Species in 23 Chapters* by Matt Ridley**

Taking a recently discovered gene from each of the 23 pairs of human chromosomes and telling its story, Matt Ridley brilliantly recounts the history of our species and its ancestors from the dawn of life to the brink of future medicine.

***Mutants: On the Form, Varieties and Errors of the Human Body* by Armand Marie Leroi**

An engrossing narrative history of what happens when things go wrong at a genetic level in the human body. With a cast of real-life characters that includes a French convent girl who found herself changing sex upon puberty, a remarkably hairy family who were kept at the Burmese royal court for four generations, and the children born with one eye located beneath their nasal cavity, this is an amazing study of human development and diversity on a grand scale.

Rosalind Franklin: The Dark Lady of DNA
by Brenda Maddox

A moving biography of the woman whom Maurice Wilkins, colleague of Francis Crick, termed 'the dark lady'. Examining her family background, her loneliness in adulthood, her relationships, and the unique work in which she was engaged, this vivid portrait sets Rosalind Franklin against a background of one of the greatest scientific discoveries of the century.

Dancing Naked in the Mind Field by
Kary Mullis

Although Kary Mullis won a Nobel Prize for his invention of PCR, interest in him has largely centred on his extracurricular activities: his past recreational use of LSD; his passion for surfing; his eye for the ladies. This autobiography doesn't disappoint: whilst chronicling his work it also tackles controversial subjects and showcases the author's unconventional views on everything from global warming and HIV/AIDs to astrology.

Read on

The Web Detective

<http://www.davidwingduncan.net/>

David Ewing Duncan's website, with information about his books, plus an archive of his published articles, radio and television appearances.

<http://davidwingduncan.net/blog/>

David's regularly updated blog, which can be accessed through his website.

<http://www.sfgrotto.org/>

Web address for the San Francisco Writers' Grotto, with information on its history, its current inhabitants and forthcoming events.