

Is genetically modified food an end to world hunger, or a first class ticket to the apocalypse? Los Angeles stands poised to find out as a team of plant biologists, led by Dr. Dan Miller, accidentally unleash a potent growth accelerant into LA's ecosystem. Now it's a race against time as the local flora, overgrowing at an impossible rate, threatens to consume the city while the U.S. government considers drastic measures. Can Dr. Miller and his team undo the damage before it's too late?

Matt Hawkins (*THINK TANK*) and **Linda Sejic** (*TALES OF HONOR*) bring the GMO debate to life amidst a backdrop of untold destruction. Treading the line between science fiction and science fact, *Wildfire* may prove to be the deadliest cautionary tale of our generation.

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WILDFIRE

Matt Hawkins • Linda Sejic

1

WILDFIRE™

Volume 1



Matt Hawkins • Linda Sejic

Minotaur Press, a Top Cow Productions Company, Presents...

WILDFIRE™

Created by
Matt Hawkins & Linda Sejic



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WILDFIRE™

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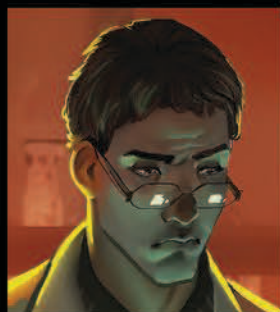


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Chapter One



PRO

"Recall that world food output will need to at least double and possibly triple over the next several decades. Even if production could be increased that much using conventional technology, which is doubtful, the required amounts of pesticide and fertilizer and other polluting chemicals would be immense. If properly developed, disseminated, and used, genetically modified crops might well be the best hope the planet has got."

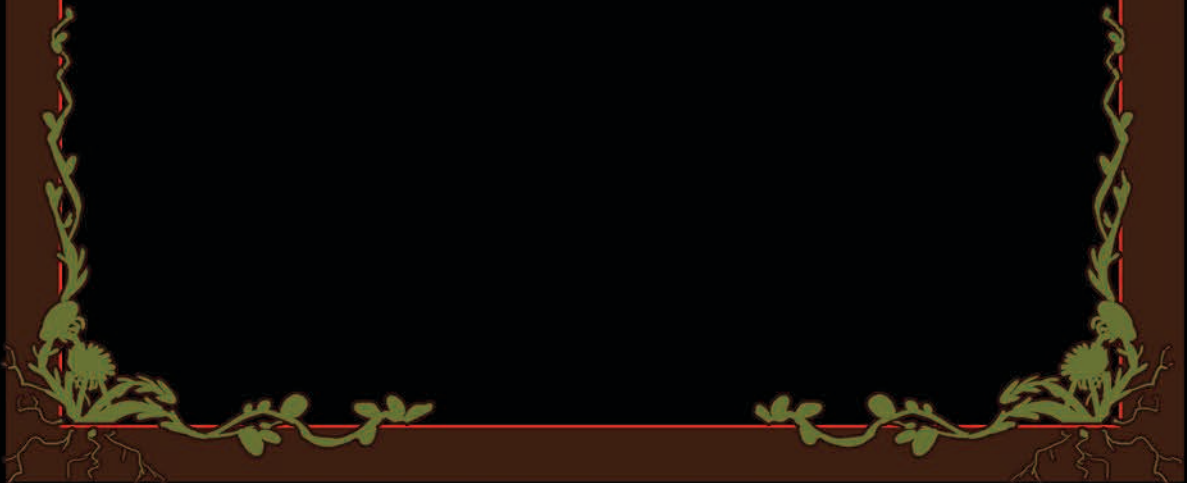
Dr. Jonathan Rauch

CON

"The genetic modification of food is intrinsically dangerous. It involves making irreversible changes in a random manner to a complex level of life about which little is known.

It is inevitable that this hit-and-miss approach will lead to disasters. It must disrupt the natural intelligence of the plant or animal to which it is applied, and lead to health-damaging side-effects."

Dr. Geoffrey Clements



LIVE
REPORT



THIS IS MICHELLE CRAWFORD FOR KCLA NEWS. LOS ANGELES IS ON FIRE. FROM DOWNTOWN, TO MIDTOWN, TO THE BEACH CITIES, THE WHOLE CITY IS ENGULFED IN FLAMES WITH VERY LITTLE CONTAINMENT REPORTED AS OF YET.

Griffith Park Observatory

Los Angeles in Flames

casualties on the rise

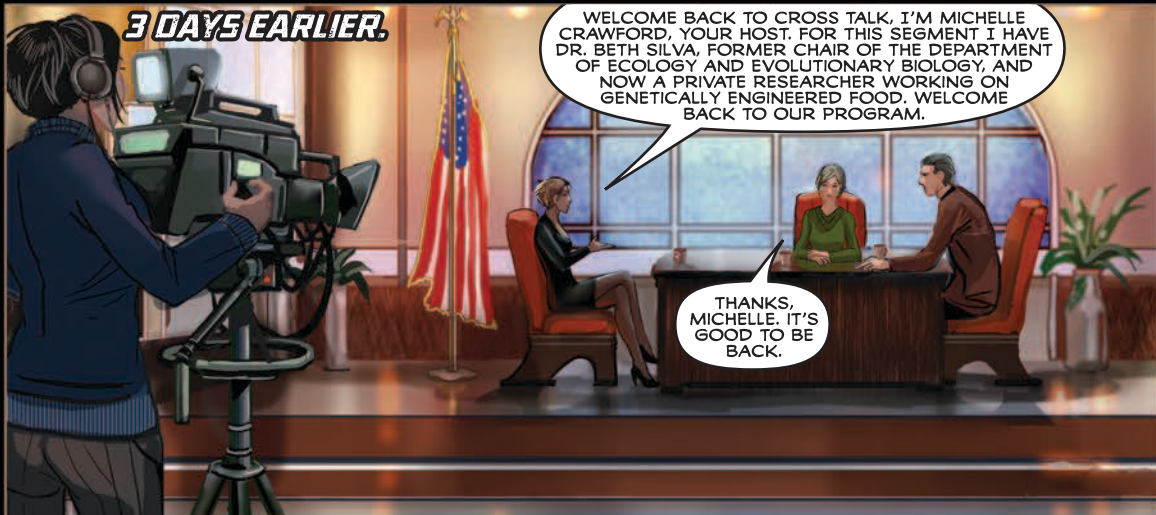


EMERGENCY SERVICES ARE OVERWHELMED AS EVACUATIONS CONTINUE TO CONTAINMENT AREAS. CASUALTIES ARE EXPECTED TO BE IN THE HUNDREDS OF THOUSANDS, AS WHAT WAS ONCE THE CITY OF ANGELS IS NOW A CITY OF ASH.





3 DAYS EARLIER.



WELCOME BACK TO CROSS TALK, I'M MICHELLE CRAWFORD, YOUR HOST. FOR THIS SEGMENT I HAVE DR. BETH SILVA, FORMER CHAIR OF THE DEPARTMENT OF ECOLOGY AND EVOLUTIONARY BIOLOGY, AND NOW A PRIVATE RESEARCHER WORKING ON GENETICALLY ENGINEERED FOOD. WELCOME BACK TO OUR PROGRAM.

THANKS, MICHELLE. IT'S GOOD TO BE BACK.

SINCE THE LAST TIME YOU WERE HERE, YOU'VE SWITCHED FROM THE TEACHING SIDE TO THE RESEARCH SIDE. HOW HAS THAT TRANSITION BEEN FOR YOU?

IT FEELS THE SAME. I'M STILL ON CAMPUS WORKING WITH PROMISING YOUNG MINDS TRYING TO MAKE THE WORLD A BETTER PLACE.

AND WE ALSO HAVE DR. GERALD LERNER, LEAD SPOKESMAN AND FOUNDER OF GREEN AWARE, AN ADVOCACY GROUP FOR ORGANIC PRODUCE AND VOCAL ADVERSARY OF GENETICALLY MODIFIED FOODS. WELCOME ALSO TO THE PROGRAM, SIR.

THANKS FOR HAVING ME ON, MICHELLE. I'M A BIG FAN OF THE SHOW.

THERE'S BEEN A LOT OF DISCUSSION AND CONTROVERSY ABOUT *GMO*, GENETICALLY MODIFIED ORGANISMS, IN THIS CASE SPECIFICALLY GENETICALLY ENGINEERED FOOD. *GE* FOOD AS THEY CALL IT.

WE'VE HEARD TERMS LIKE *FRANKENFOOD* TOSSED AROUND. DR. LERNER, LET'S START WITH YOU. TELL US ABOUT GREEN AWARE AND WHY YOU'RE SO OPPOSED TO THESE *GE* FOODS.

I STARTED *GREEN AWARE* WHEN I REALIZED THAT COMPANIES WERE GENETICALLY ALTERING SEEDS, FOOD, AND ANIMALS WITHOUT ANY OVERSIGHT FROM THE GOVERNMENT.

CREATING POTENTIALLY DEADLY ORGANISMS, PURPOSEFULLY OR ACCIDENTALLY, COULD ALTER OUR ECOSYSTEM FOREVER.

ONE COMPANY I WON'T NAME, BECAUSE THEY LITIGATE LIKE MAD, HAS CORNERED THIS MARKET AND PATENTED THOUSANDS OF SLIGHT GENETIC VARIATIONS. THEY NOW HAVE MONOPOLY CONTROL THAT OUR GOVERNMENT ALLOWS.

M **Dr. Gerald Lerner**

Founder of Green Aware

WHY? I DON'T KNOW. I CAN'T GET A SINGLE MEMBER OF CONGRESS TO LOOK ME IN THE EYE AND TELL ME WHY THEY ALLOW THIS.

SO I STARTED MY OWN FOUNDATION, WITH MY OWN MONEY, AND HAVE STARTED RAISING AWARENESS.

OUR CITIZENS SHOULD NOT BE USED AS UNWITTING GUINEA PIGS.



I CAN ASSUME YOU'RE TALKING ABOUT *BIOGENESIS*. THEY FUND THE GRANT THAT ALLOWS MY RESEARCH. LET ME STATE THAT UP FRONT, AND THEY'VE BEEN GREAT WITH US. NO INTERFERENCE, VERY SUPPORTIVE OF THE SCIENCE, AND LET US DO OUR THING.

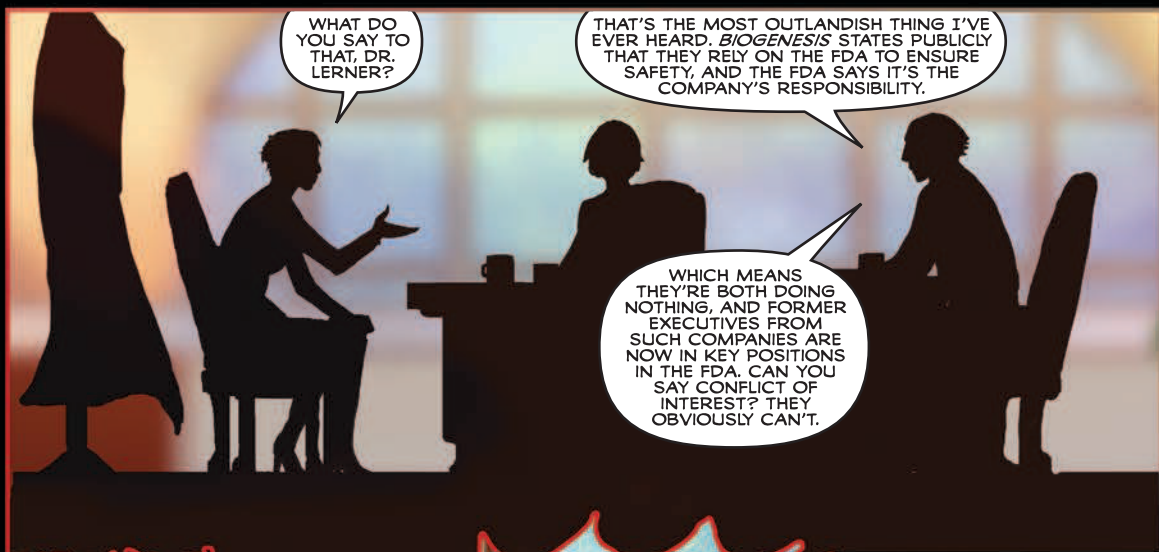
SAYING THERE IS NO GOVERNMENT OVERSIGHT IS ABSURD.



WE HAVE STRINGENT TESTING PROCEDURES APPROVED BY THE DEPARTMENT OF AGRICULTURE, AND WE WORK HAND IN HAND WITH THE FDA FOR APPROVALS TO ENSURE THAT OUR PRODUCE IS SAFE FOR THE ENVIRONMENT AND FOR THE CONSUMERS.



THAT'S WHY IT TAKES SO LONG TO BRING ANYTHING TO MARKET.



WHAT DO YOU SAY TO THAT, DR. LERNER?

THAT'S THE MOST OUTLANDISH THING I'VE EVER HEARD. *BIOGENESIS* STATES PUBLICLY THAT THEY RELY ON THE FDA TO ENSURE SAFETY, AND THE FDA SAYS IT'S THE COMPANY'S RESPONSIBILITY.

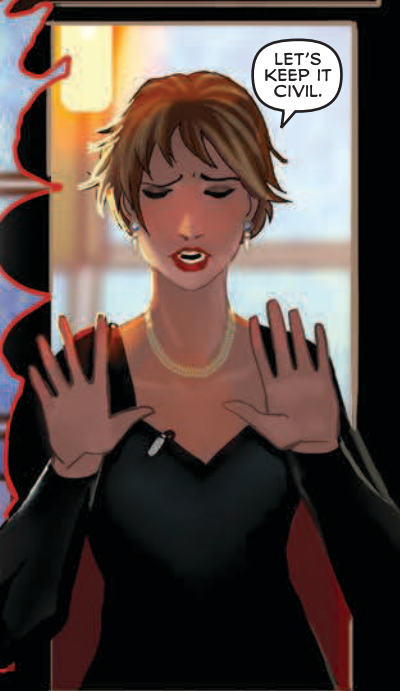
WHICH MEANS THEY'RE BOTH DOING NOTHING, AND FORMER EXECUTIVES FROM SUCH COMPANIES ARE NOW IN KEY POSITIONS IN THE FDA. CAN YOU SAY CONFLICT OF INTEREST? THEY OBVIOUSLY CAN'T.



DR. SILVA IS A SHILL FOR *BIOGENESIS*, AND IS SO FAR IN THEIR POCKET, WE HAVE TO WONDER IF WE CAN BELIEVE ANYTHING OUT OF HER PROFITEERING MOUTH.



I AM A SCIENTIST, SIR. MY ALLEGIANCE IS TO THE TRUTH. YOU, HOWEVER, PEDDLE YOUR LIES TO ANYONE THAT WILL LISTEN WITH WILD UNSUBSTANTIATED ALLEGATIONS.



LET'S KEEP IT CIVIL.



YOU'RE THE WORST KIND OF LIAR; IT'S NO WONDER 50% OF THIS COUNTRY DOESN'T TRUST SCIENTISTS.

INDEPENDENT STUDIES SHOW THESE FOODS ARE DANGEROUS. THEY CAUSE CANCER AND ARE PERMANENTLY ALTERING OUR ENVIRONMENT WITH NO CLEAR IDEA OF THE LONG-TERM EFFECTS.



WHAT GOOD HAVE YOU DONE OTHER THAN LINE YOUR OWN POCKET? YOU DISGUST ME.

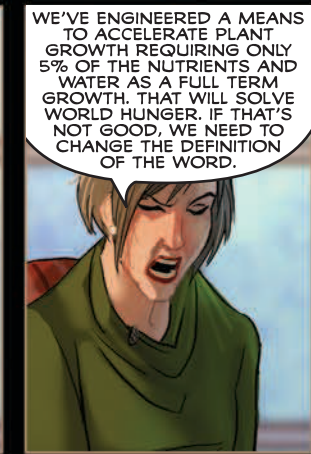


THAT'S ENOUGH -- BOTH OF YOU NEED TO CALM DOWN!

DR. SILVA, I'LL LET YOU HAVE THE LAST WORD.



WHAT GOOD HAVE WE DONE?



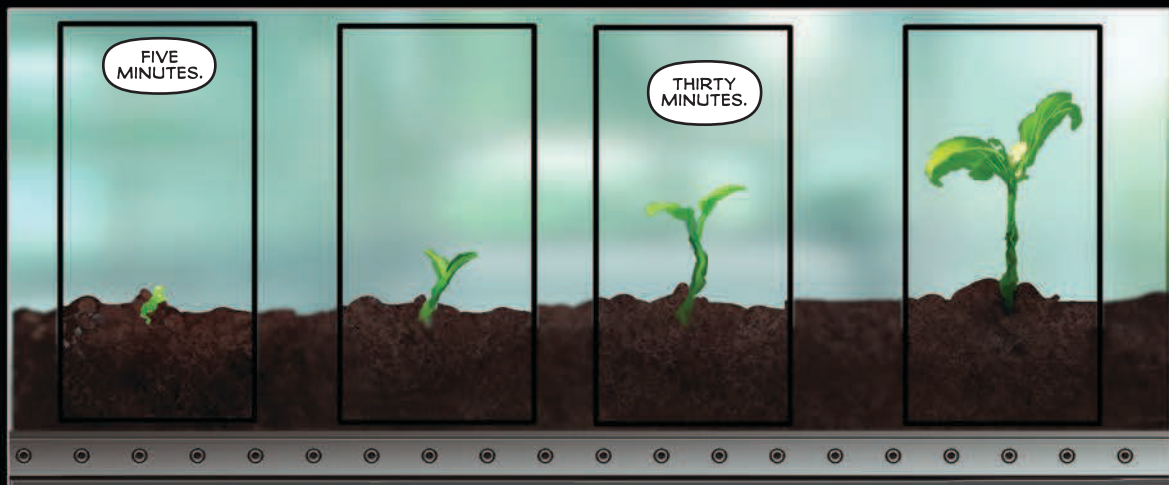
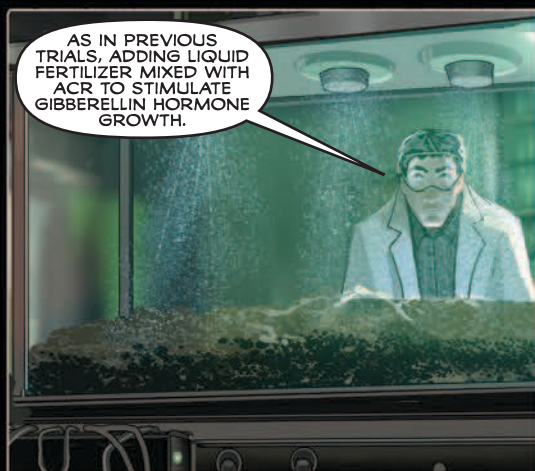
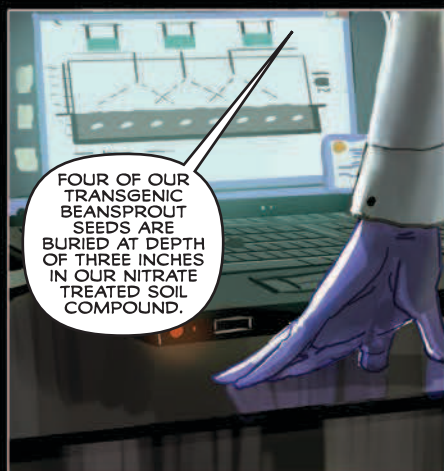
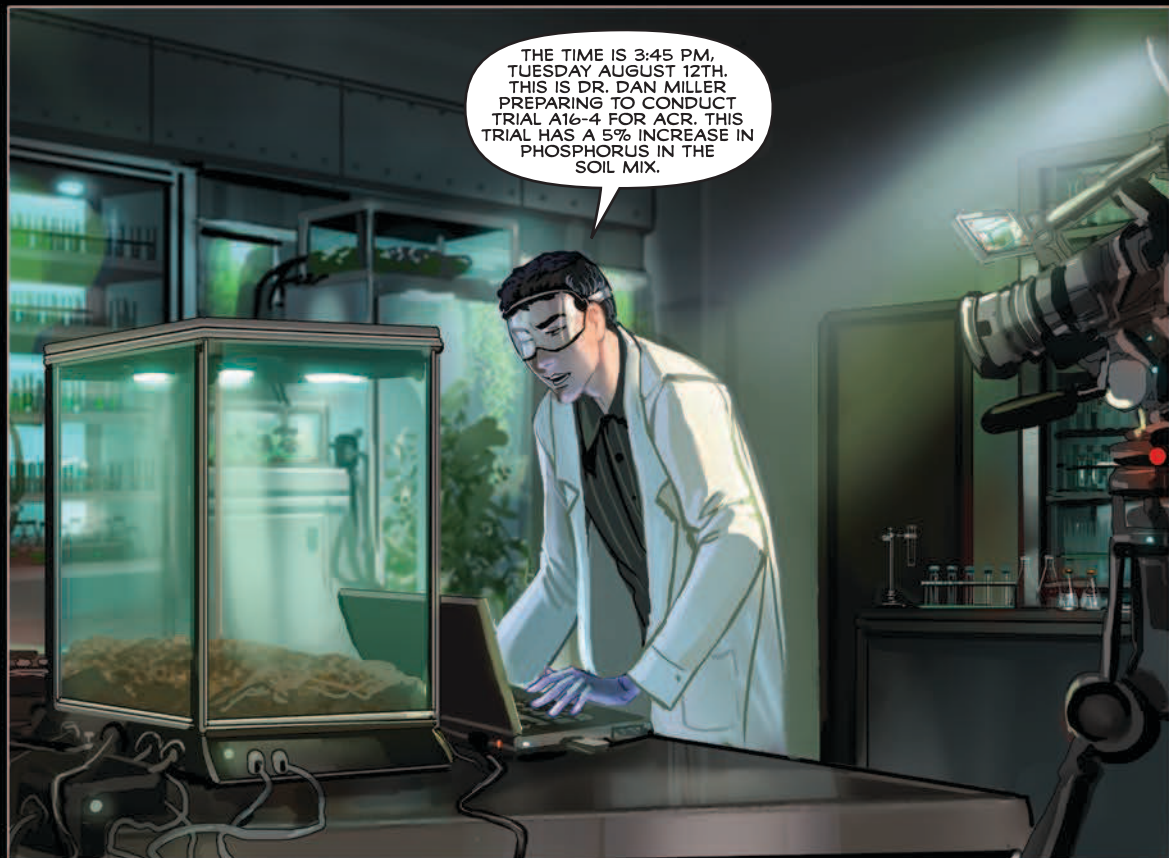
WE'VE ENGINEERED A MEANS TO ACCELERATE PLANT GROWTH REQUIRING ONLY 5% OF THE NUTRIENTS AND WATER AS A FULL TERM GROWTH. THAT WILL SOLVE WORLD HUNGER. IF THAT'S NOT GOOD, WE NEED TO CHANGE THE DEFINITION OF THE WORD.

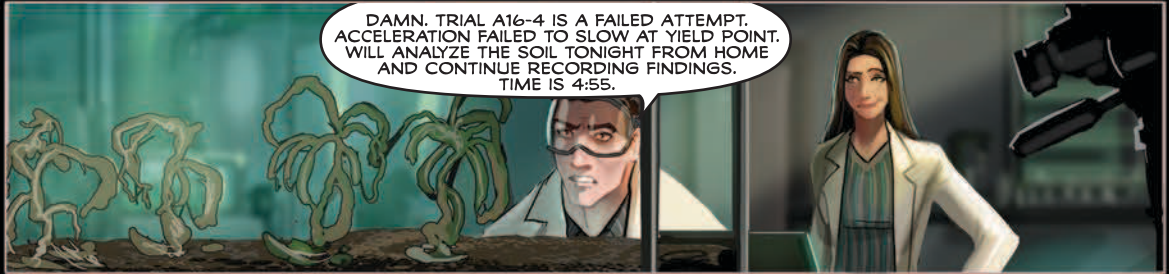
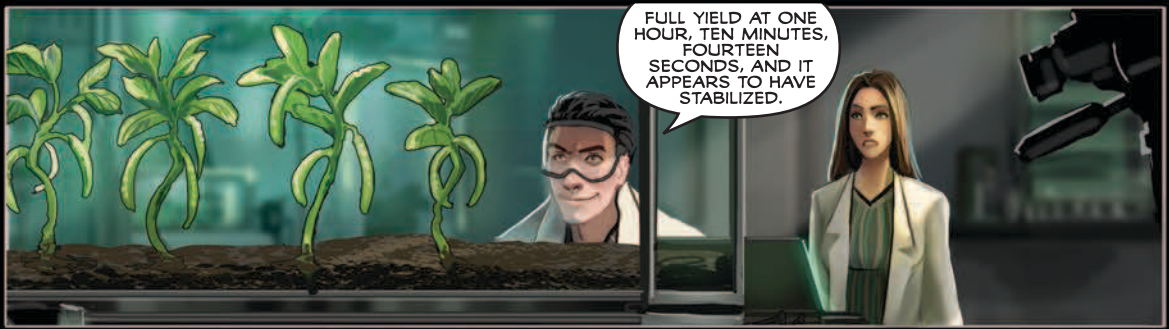


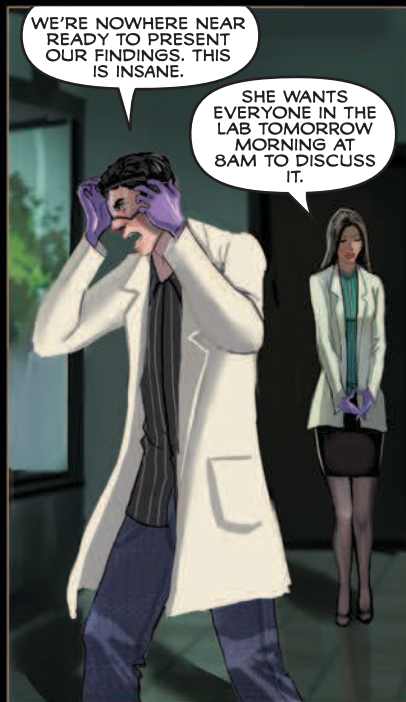
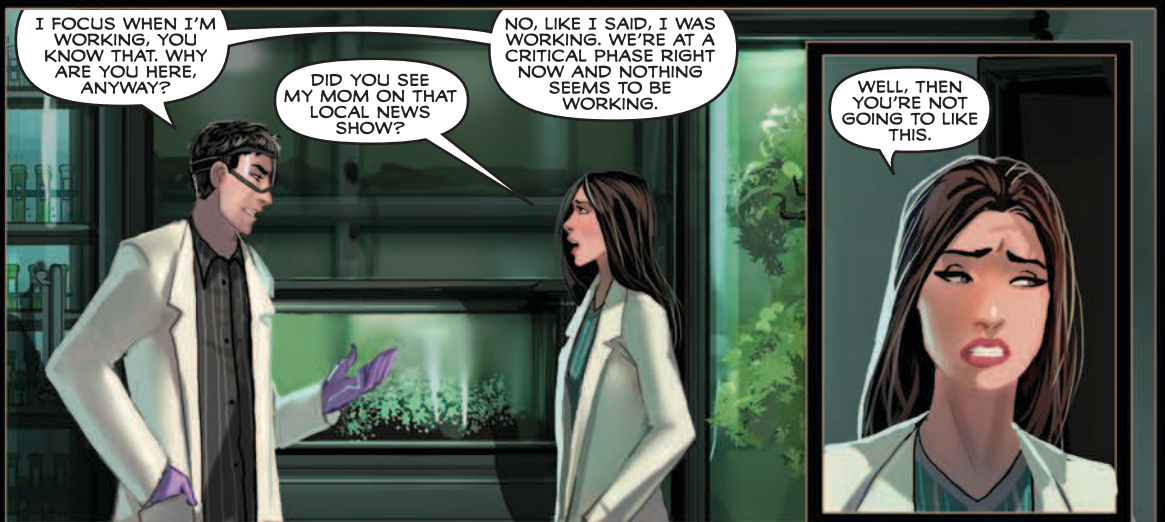
WOW! WE'RE LOOKING FORWARD TO LEARNING MORE ABOUT THAT. THAT'S ALL THE TIME WE HAVE, THANKS FOR WATCHING.

M End of world hunger?









9:00 PM.

YEAH, I'M SO OVER BIEBER, HE'S DISGUSTING NOW.

YOUR SISTER IS NO LONGER A BELIEBER?

SHUT UP AND IGNORE HER, PLEASE. IT'S HARD ENOUGH TO FOCUS WITH HER BABBLING ENDLESSLY ON THE PHONE.



I DON'T UNDERSTAND WHY THE STABILIZATION AGENTS DON'T WORK.

THEORETICALLY IT SHOULD WORK.

YEAH, WITHOUT THAT IT JUST ENDS IN DESICCATION.



YEAH, HE'S HERE. HE'S WORKING, OF COURSE. OKAY I'LL TELL HIM. BYE.

WOULD REVERSE OSMOSIS HELP ELIMINATE ANY UNKNOWN CONTAMINANTS?

WE TRIED THAT IN THE A-12 TRIALS, BUT WE STILL NEED AN ANSWER FOR CONTAMINANTS. FARM FIELDS AREN'T STERILE ENVIRONMENTS.



THAT WAS VIOLET.

SHE SAID SHE WANTED TO COME OVER TONIGHT AND YOU SAID NO. WHAT'S YOUR PROBLEM?



I MEAN, I DON'T GET WHY SHE'S EVEN INTO YOU, SHE'S HOT. YOU'RE NEVER GOING TO DO BETTER THAN THAT.



I DON'T WANT HER AROUND YOU, ASH. SHE'S A BAD INFLUENCE. YOU KNOW IT. I KNOW IT. END OF STORY.

I'VE TRIED TO LOOK AFTER YOU, YA KNOW, EVER SINCE MOM DIED. THIS ISN'T EASY ON ME EITHER, LIVING WITH A 15-YEAR-OLD SISTER.





YOU'RE REALLY GOING TO HOLD THE PARTY AGAINST HER FOREVER? WHY ARE YOU MAD AT HER? I'M THE ONE WHO DID IT.



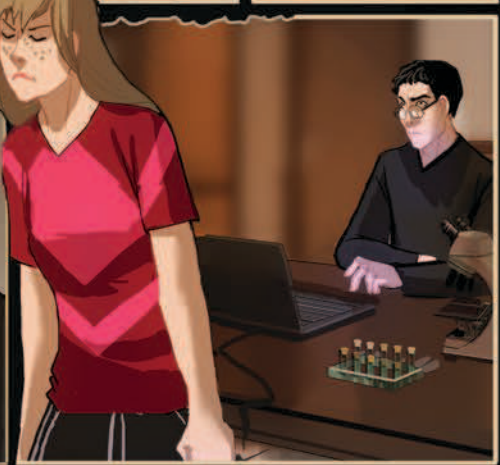
IT WASN'T MY FAULT, YOU KNOW, THAT IS WHY THE JUDGE THREW MY CASE OUT.



I KNOW, BUT YOU STILL GOT ARRESTED. YOU WANT SOMETHING LIKE THAT ON YOUR RECORD FOREVER?

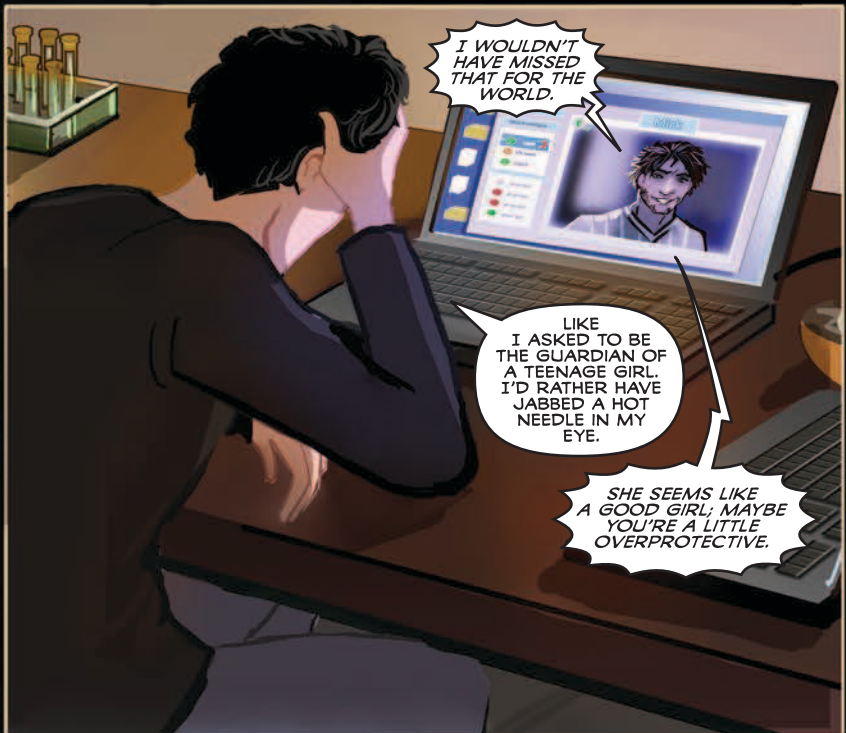


YOU'RE NOT MY FATHER, DAN! CHRIST, WHY DO YOU CARE WHAT I DO?



HA HA HA HA HA!

SORRY YOU HAD TO HEAR ALL THAT.

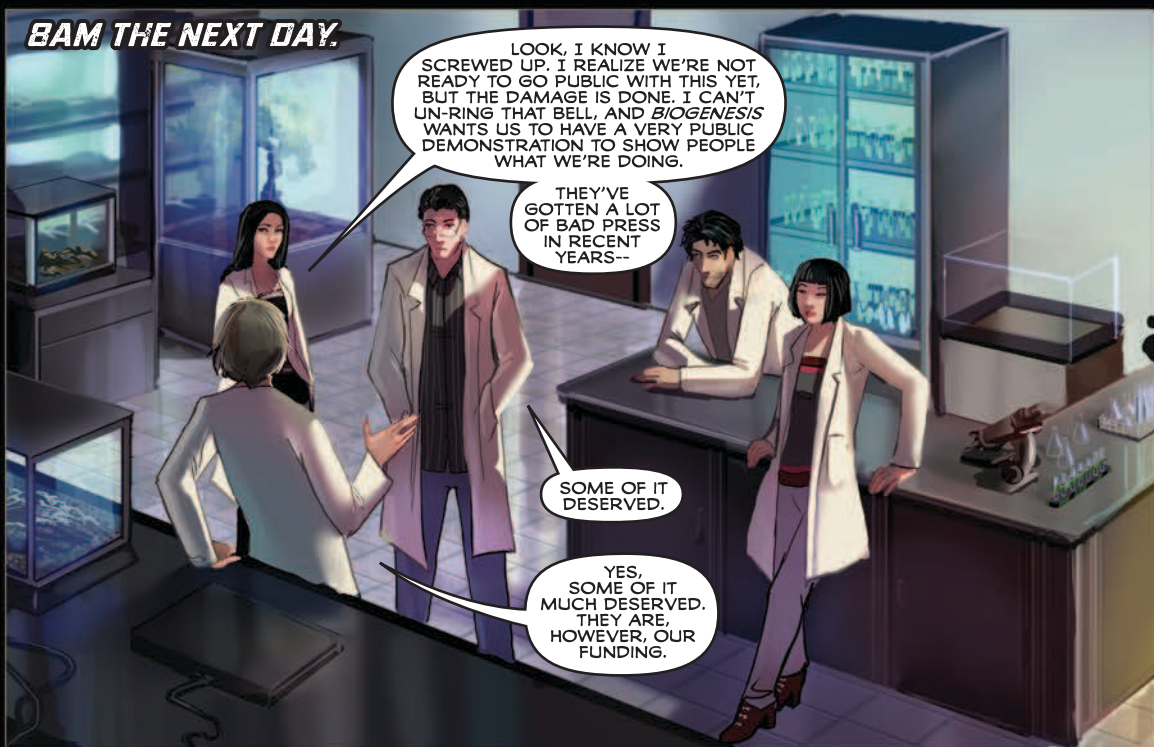


I WOULDN'T HAVE MISSED THAT FOR THE WORLD.

LIKE I ASKED TO BE THE GUARDIAN OF A TEENAGE GIRL, I'D RATHER HAVE JABBED A HOT NEEDLE IN MY EYE.

SHE SEEMS LIKE A GOOD GIRL, MAYBE YOU'RE A LITTLE OVERPROTECTIVE.

BAM THE NEXT DAY.



LOOK, I KNOW I SCREWED UP. I REALIZE WE'RE NOT READY TO GO PUBLIC WITH THIS YET, BUT THE DAMAGE IS DONE. I CAN'T UN-RING THAT BELL, AND *BIOGENESIS* WANTS US TO HAVE A VERY PUBLIC DEMONSTRATION TO SHOW PEOPLE WHAT WE'RE DOING.

THEY'VE GOTTEN A LOT OF BAD PRESS IN RECENT YEARS--

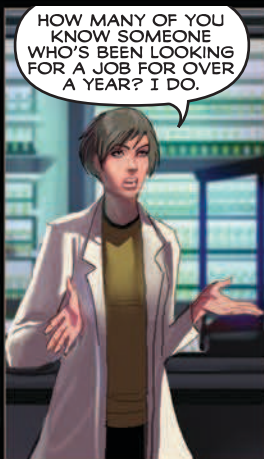
SOME OF IT DESERVED.

YES, SOME OF IT MUCH DESERVED. THEY ARE, HOWEVER, OUR FUNDING.

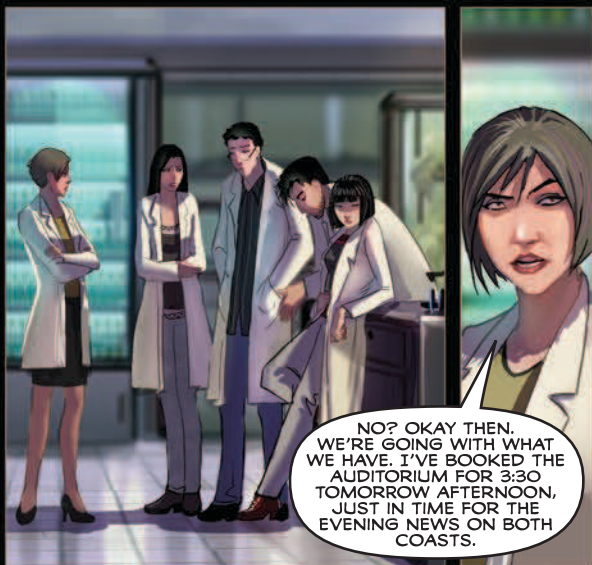
WITHOUT THEM WE SHUT DOWN, AND THE UNIVERSITY WON'T CONTINUE THE PROGRAM WITHOUT OUTSIDE MONEY. WE'RE ALL LOOKING FOR JOBS.



HOW MANY OF YOU KNOW SOMEONE WHO'S BEEN LOOKING FOR A JOB FOR OVER A YEAR? I DO.



DO YOU REALLY WANT TO BE LOOKING FOR JOBS IN THIS ECONOMY?



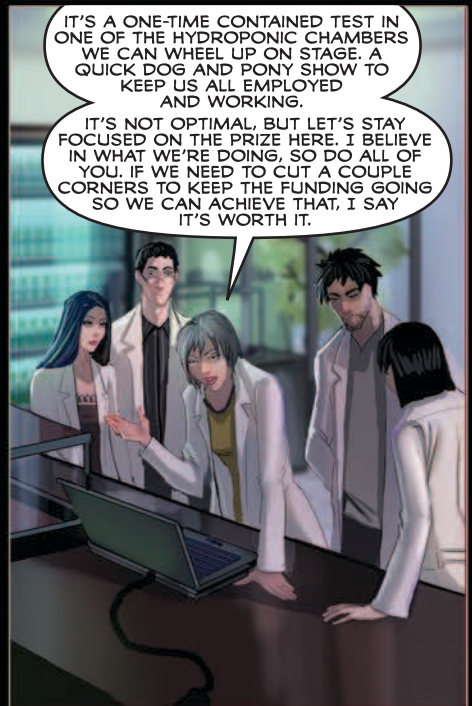
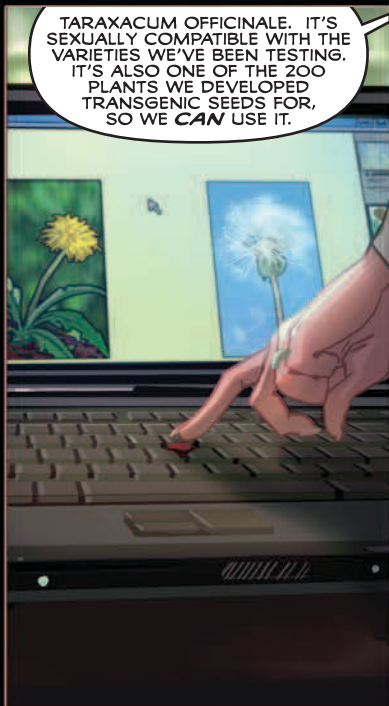
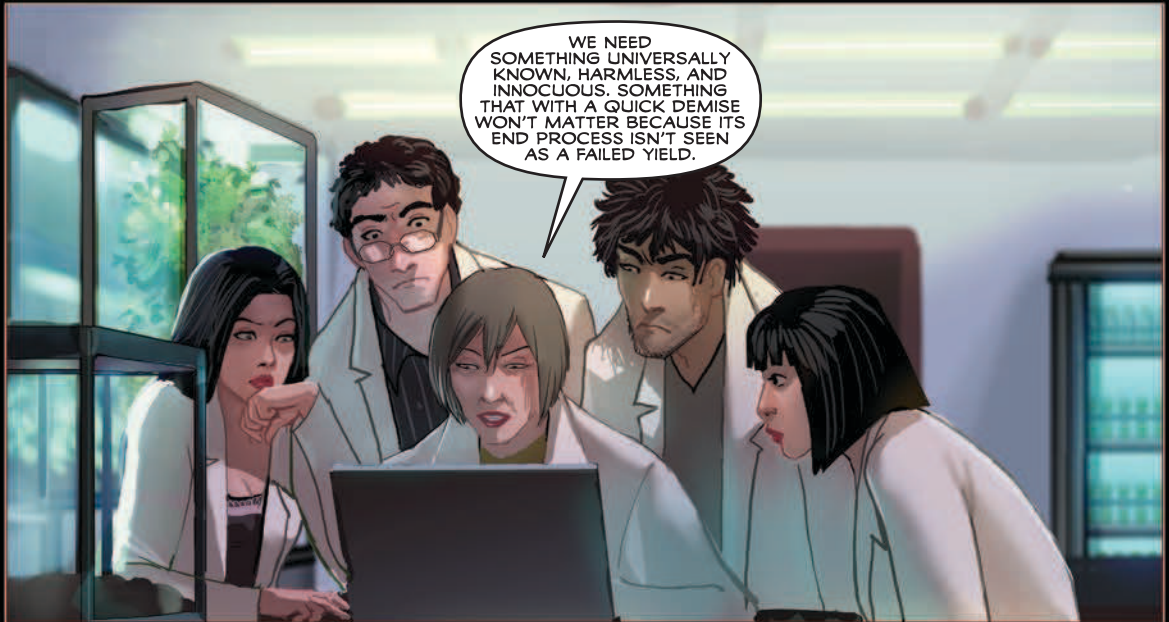
NO? OKAY THEN. WE'RE GOING WITH WHAT WE HAVE. I'VE BOOKED THE AUDITORIUM FOR 3:30 TOMORROW AFTERNOON, JUST IN TIME FOR THE EVENING NEWS ON BOTH COASTS.

EVERYONE WILL PREP, BUT IT WILL JUST BE DAN AND ME ON THE PODIUM.



YOU'LL BE CONDUCTING THE EXPERIMENT AND WE'LL BOTH BE NARRATING THE PROCESS. KEEP IT SIMPLE AND EXPLAIN WHAT YOU'RE DOING AS YOU CONDUCT, AND I'LL ADD ANALYSIS.



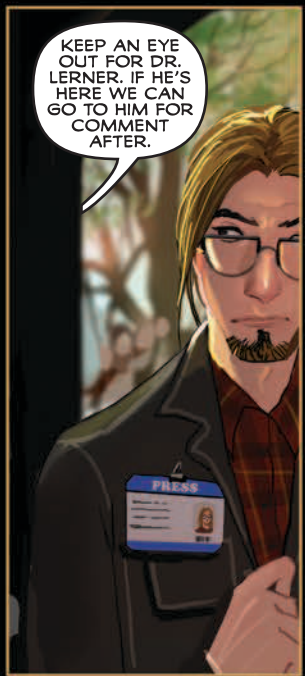




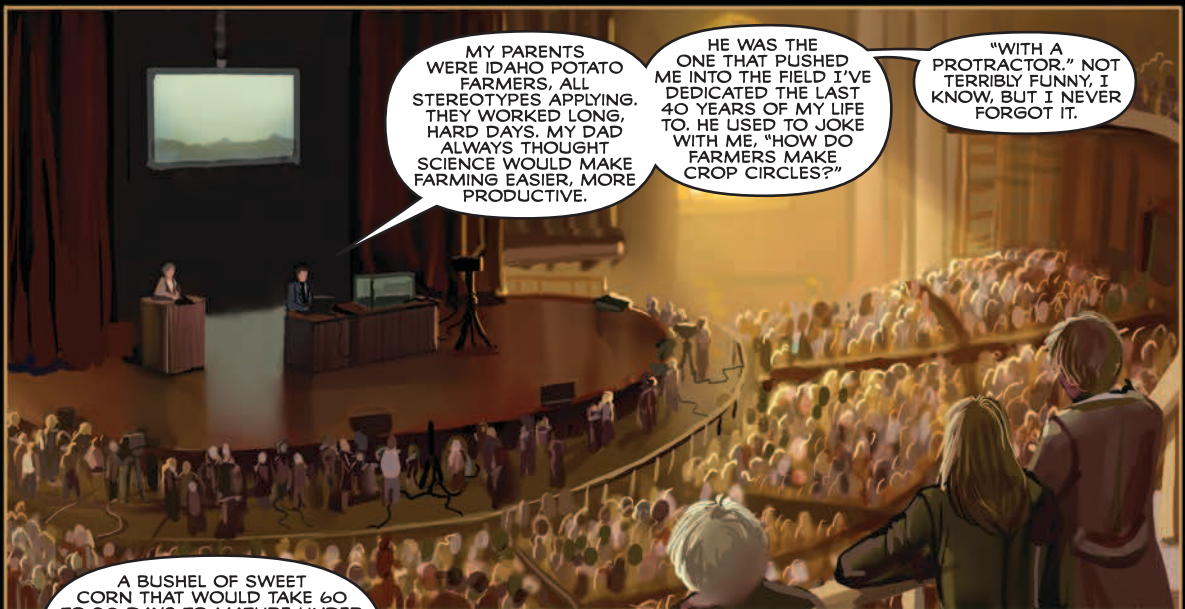
IN JUST A FEW MINUTES, DR. BETH SILVA AND HER TEAM WILL BEGIN THEIR DEMONSTRATION OF A SCIENTIFIC BREAKTHROUGH IN PLANT GROWTH, IN WHAT SHE CALLED ON MY PROGRAM JUST DAYS AGO, "THE END OF WORLD HUNGER."



THE *GREEN AWARE* PEOPLE WERE PROMISING TO PROTEST THIS EVENT.



KEEP AN EYE OUT FOR DR. LERNER. IF HE'S HERE WE CAN GO TO HIM FOR COMMENT AFTER.



MY PARENTS WERE IDAHO POTATO FARMERS, ALL STEREOTYPES APPLYING. THEY WORKED LONG, HARD DAYS. MY DAD ALWAYS THOUGHT SCIENCE WOULD MAKE FARMING EASIER, MORE PRODUCTIVE.

HE WAS THE ONE THAT PUSHED ME INTO THE FIELD I'VE DEDICATED THE LAST 40 YEARS OF MY LIFE TO. HE USED TO JOKE WITH ME, "HOW DO FARMERS MAKE CROP CIRCLES?"

"WITH A PROTRACTOR." NOT TERRIBLY FUNNY, I KNOW, BUT I NEVER FORGOT IT.



A BUSHEL OF SWEET CORN THAT WOULD TAKE 60 TO 90 DAYS TO MATURE UNDER OPTIMAL CIRCUMSTANCES CAN BE GROWN IN 3 DAYS, USING A FRACTION OF THE WATER AND NUTRIENTS, ALLOWING QUICKER TURNAROUND WITHOUT THE NEED FOR FALLOW SOIL ROTATION.



FOR THIS DEMONSTRATION MY PROTÉGÉ HERE, DR. DAN MILLER, WILL BE SHOWING YOU HOW WE'VE ACHIEVED THIS.

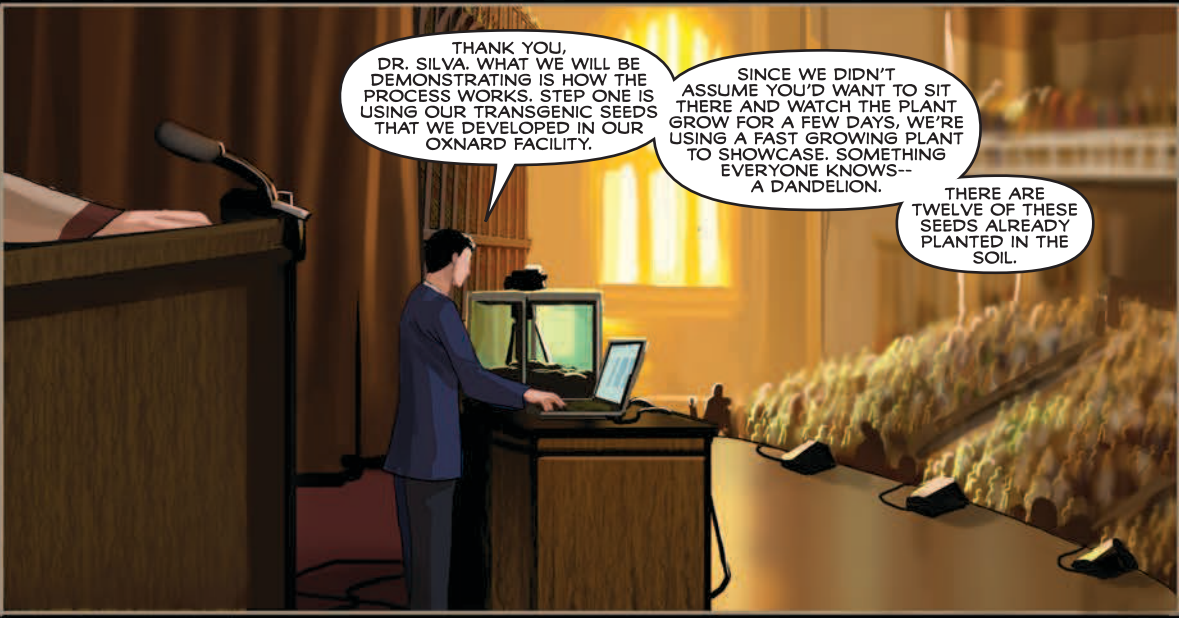


DR. MILLER, PLEASE COMMENCE.

THANK YOU, DR. SILVA. WHAT WE WILL BE DEMONSTRATING IS HOW THE PROCESS WORKS. STEP ONE IS USING OUR TRANSGENIC SEEDS THAT WE DEVELOPED IN OUR OXNARD FACILITY.

SINCE WE DIDN'T ASSUME YOU'D WANT TO SIT THERE AND WATCH THE PLANT GROW FOR A FEW DAYS, WE'RE USING A FAST GROWING PLANT TO SHOWCASE. SOMETHING EVERYONE KNOWS-- A DANDELION.

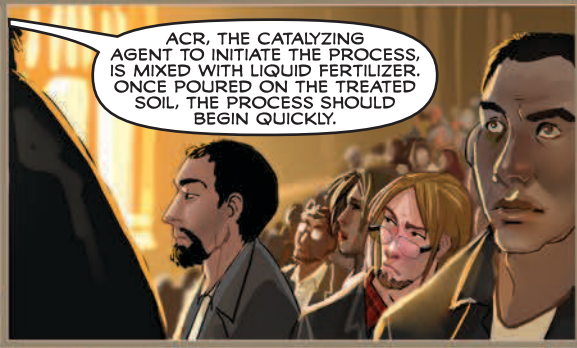
THERE ARE TWELVE OF THESE SEEDS ALREADY PLANTED IN THE SOIL.



KEEP IN MIND, WE'RE USING IDEAL CIRCUMSTANCES HERE AND SPECIALLY TREATED SOIL, WHICH WILL BE FAR MORE DIFFICULT TO DUPLICATE IN THE FIELD--

--BUT VERY DOABLE. WE'VE SUCCESSFULLY EXPERIMENTED WITH OVER 100 SEED VARIETIES IN ONE OF OUR OUTDOOR GREENHOUSES.

ACR, THE CATALYZING AGENT TO INITIATE THE PROCESS, IS MIXED WITH LIQUID FERTILIZER. ONCE POURED ON THE TREATED SOIL, THE PROCESS SHOULD BEGIN QUICKLY.



IT WILL TAKE A FEW MINUTES, THANKS FOR YOUR PATIENCE.





CLAP CLAP

CLAP CLAP

CLAP CLAP

AND THAT'S HOW IT WORKS.

WE WILL TAKE ANY QUESTIONS NOW. COME UP TO THE MICROPHONE PLEASE.

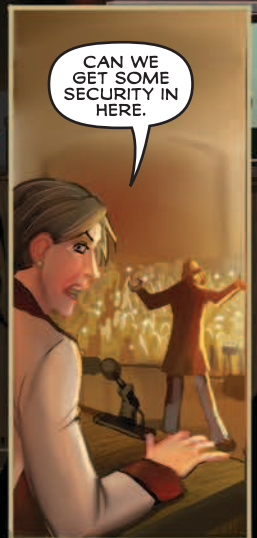


DO WE REALLY WANT MORE GENETIC TAMPERING OF OUR FOOD? THE AMA HAS RECOMMENDED THAT ALL PATIENTS EAT A NON-GMO DIET. WHY IS THAT? BECAUSE GE FOOD IS POISON. WE'RE CREATING THINGS, AND LETTING THEM RUN WILD IN OUR ECOSYSTEM WITH NO IDEA OF THE LONG TERM EFFECTS.

I HAVE ONE.



CAN WE GET SOME SECURITY IN HERE.



WE HAVE TO STOP COMPANIES LIKE BIOGENESIS FROM BUYING OUR SCIENTISTS AND UNIVERSITIES TO CREATE A STRANGLEHOLD ON THE WORLD FOOD SUPPLY.

THEY PROMISE FOOD FOR THE HUNGRY, BUT DELIVER A MONOPOLY WHERE THEY CONTROL OUR VERY SUSTENANCE.

LET'S GO, BUDDY, YOU'VE HAD YOUR FIFTEEN SECONDS.

AND NOW THEY TRY AND SILENCE THE VOICE OF THE PEOPLE.

WHACK

WHUMP

KRASH

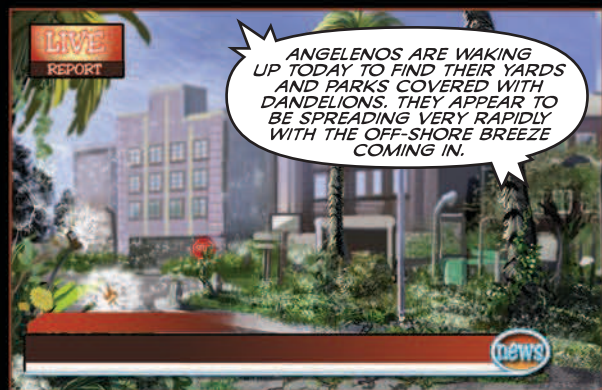
WE WERE JUST GOING TO THROW YOU OUT, WHACK JOB, NOW YOU'RE GOING TO JAIL!

I WANT TO BE ARRESTED-- ANYTHING TO CALL ATTENTION TO THE LIES, THE EVIL, BEING PERPETRATED HERE AS TRUTH.



6AM NEXT DAY







Chapter Two

1. The terms "genetically modified organism" (GMO) and "genetically modified foods" (GM foods) refer to plants or animals whose genes have been changed in the laboratory by scientists. All living organisms have genes written in their DNA. They are the chemical instructions for building and maintaining life. By modifying the genes, scientists can alter the characteristics of an organism. In agriculture, genetic engineering allows simple genetic traits to be transferred to crop plants from wild relatives, other distantly related plants, or virtually any other organism. Manipulating the genetics of foods is not new.

- Michael Murray, N.D. and Joseph Pizzorno, N.D.,
The Encyclopedia of Healing Foods

2. We have entered an era of genetically modified foods, which are just that--genetically mutated foods that are not necessarily better for you. The health implications not only to humans but also to the environment is a hotly contested debate; the introduction of genetically altered food could have serious consequences, such as allergic reactions and increased resistance to certain antibiotics. Two of the prime targets for genetic engineering -- soy and corn -- are America's cash crops.

- Brenda Watson and Leonard Smith,
The Detox Strategy: Vibrant Health in 5 Easy Steps

7:30 AM

THIS IS MICHELLE CRAWFORD, KCLA NEWS. I'M IN WESTWOOD AT THE VA CEMETERY, WHICH HAS BEEN COMPLETELY OVERRUN WITH DANDELIONS ALONG WITH THE REST OF THE WEST SIDE.

IT WAS JUST YESTERDAY WE COVERED DR. BETH SILVA'S PRESS CONFERENCE AT THE UNIVERSITY OF CALIFORNIA WHERE SHE DEMONSTRATED A NEW COMPOUND CALLED ACR DESIGNED TO ACCELERATE PLANT GROWTH.

THESE FAST GROWING DANDELIONS SPREADING UNCONTROLLED THROUGHOUT THE CITY ARE CLEARLY RELATED, BUT WE'VE BEEN UNABLE TO GET COMMENT FROM DR. SILVA, THE UNIVERSITY, OR ANY CITY OFFICIALS AT THIS POINT.

EXPERTS ARE RECOMMENDING THAT ALLERGY SUFFERERS REMAIN INDOORS....



...BUT OTHER THAN THAT, THIS IS SEEN AS MORE OF A NUISANCE THAN ANYTHING ELSE.



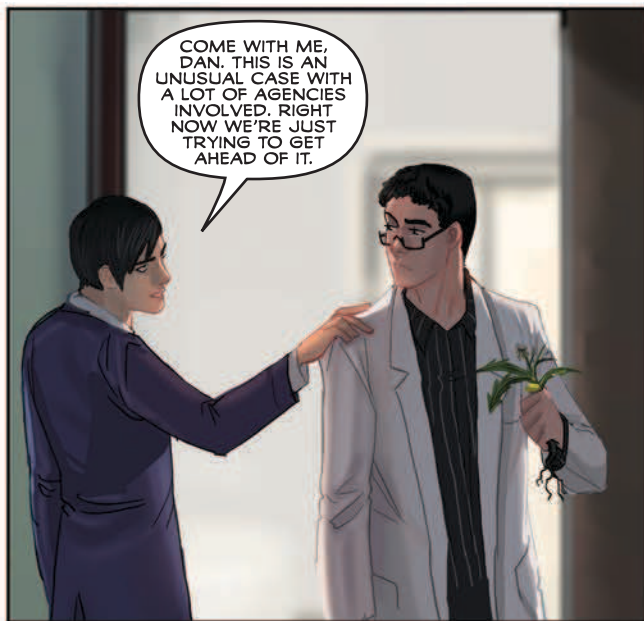
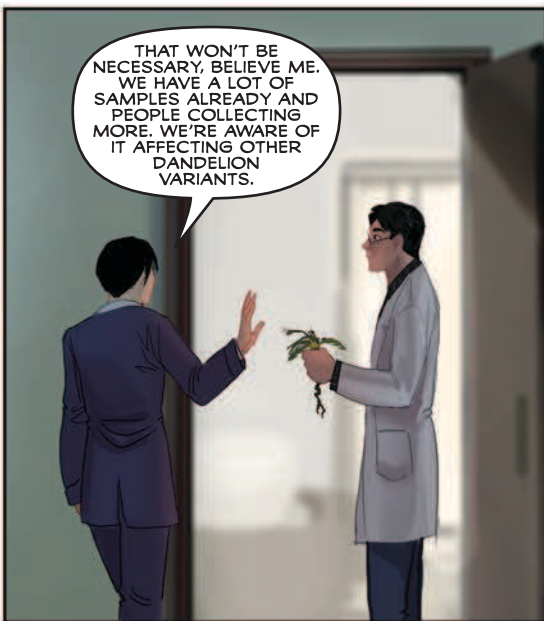
THAT WAS GREAT, MICHELLE. LET'S GET A COUPLE OF SHOTS OF YOU WALKING THROUGH THE HEADSTONES AND FILM SOME OF THE PLANT GROWTH. WE'LL USE THE FOOTAGE SOMEWHERE.



7:45 AM



8:30 AM





THE DHS, FEMA, FDA, AND CDC HAVE PUT TOGETHER A JOINT TASK FORCE IN UNDER THREE HOURS AND HAVE ALREADY ISSUED A QUARANTINE ZONE, ALTHOUGH IT'S NOT PUBLIC YET.



SOME POWERFUL PEOPLE SEEM PANICKED AND AREN'T SAYING WHY...AND THAT SCARES ME.

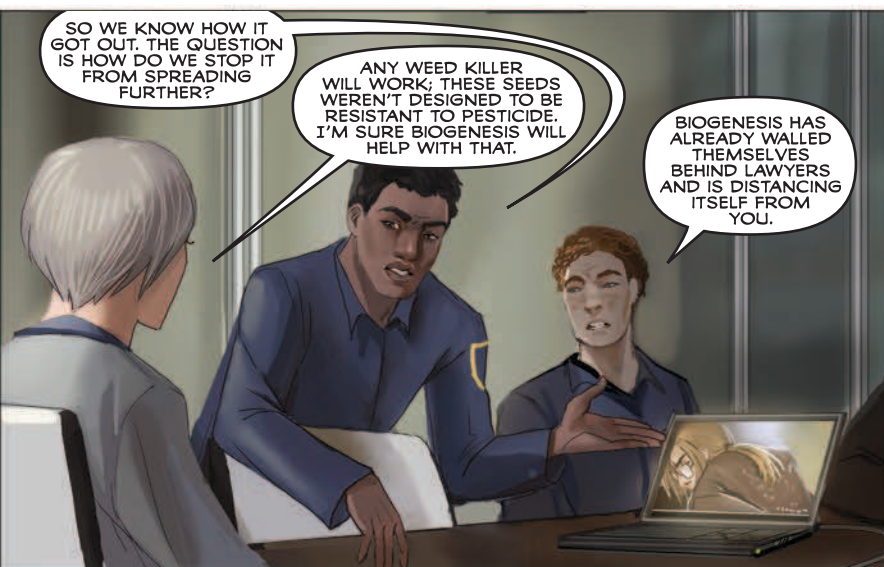


I NEED YOU TO EXPLAIN TO ME HOW ACR WORKS.



THE POINT OF ORIGIN WAS THE PRESS CONFERENCE YESTERDAY. AN EARLY MAP OF ITS SPREAD LINES UP WITH WIND PATTERNS.

VIDEO SHOWS THAT AFTER THE GLASS CASE WAS BROKEN THE ACTIVIST HAD DANDELION SEEDS ON HIS JACKET.



SO WE KNOW HOW IT GOT OUT. THE QUESTION IS HOW DO WE STOP IT FROM SPREADING FURTHER?

ANY WEED KILLER WILL WORK; THESE SEEDS WEREN'T DESIGNED TO BE RESISTANT TO PESTICIDE. I'M SURE BIOGENESIS WILL HELP WITH THAT.

BIOGENESIS HAS ALREADY WALLED THEMSELVES BEHIND LAWYERS AND IS DISTANCING ITSELF FROM YOU.



WHAT?!



ACCORDING TO THEIR CHIEF COUNSEL YOU ARE, "AN INDEPENDENT LAB OPERATING UNDER UNIVERSITY RESEARCH OVERSIGHT."

DEAN HORMEL, WE CAN'T LET THE UNIVERSITY TAKE THE BLAME FOR THIS.



EXACTLY, BETH. WE'VE KNOWN EACH OTHER FOR A LONG TIME, BUT YOU'VE REALLY SCREWED UP HERE. THE TRUSTEES WANT YOU OUT.



PLEASE, DON'T DO THIS. MY TEAM AND I CAN FIX THIS.



THE SYNTHESIS OF NEW PROTEINS AND MACROMOLECULES DETERMINES CELLULAR GROWTH. GENES THAT ENCODE COMPONENTS OF THE PLANT TRANSLATIONAL MACHINERY, SUCH AS RIBOSOMAL PROTEINS--

UH...I REALIZE I'M ASIAN, AND THAT MAY HAVE MISTAKENLY LED YOU TO ASSUME I'D UNDERSTAND ALL THAT, BUT CAN YOU TRY AGAIN...IN ENGLISH PLEASE?

OH, SORRY... SIMPLY PUT, *ACR* SPEEDS UP NATURAL GROWTH PROCESSES IN SPECIALLY DESIGNED TRANSGENIC SEEDS.



IF IT ONLY WORKS ON YOUR SEEDS, WHY DO WE HAVE MULTIPLE DANDELION SPECIES AFFECTED?

HOLD THAT THOUGHT.



THIS IS AGENT CHEN.

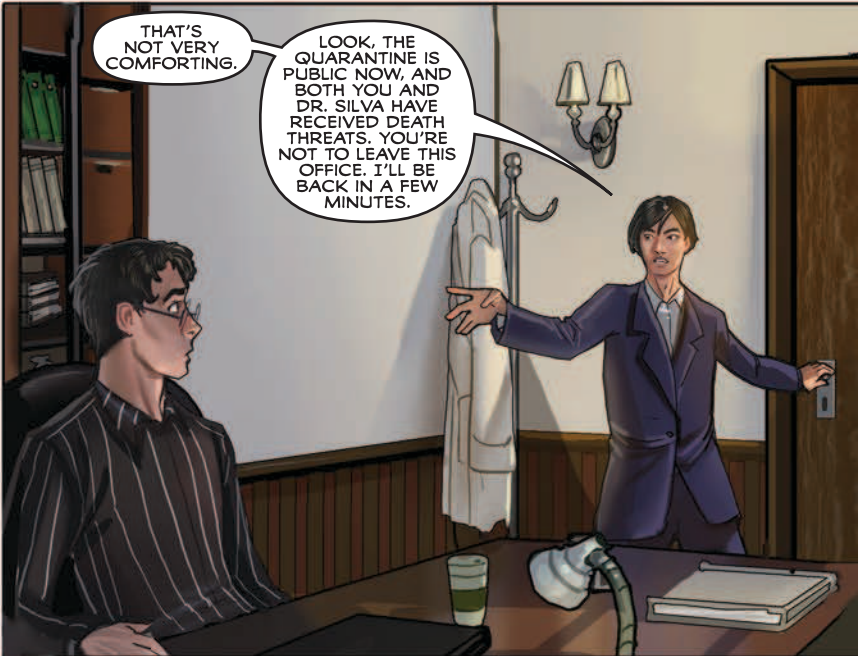
THAT'S CONFIRMED? OKAY, I'LL BE RIGHT THERE.



NOW WE'VE GOT WEEDS BESIDES DANDELIONS SHOWING SIGNS OF ACCELERATED GROWTH AS WELL.



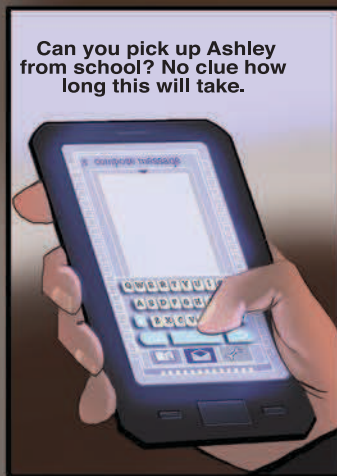
SOME WEEDS ARE SEXUALLY COMPATIBLE, AND SEEDS ARE PASSED DOWN GENERATIONALLY. THERE ARE ALSO FACTORS IN THE WILD WHICH MAY HAVE CAUSED MUTATION. IT'S HARD TO SAY REALLY, WITHOUT ANALYZING THEM.



THAT'S NOT VERY COMFORTING.

LOOK, THE QUARANTINE IS PUBLIC NOW, AND BOTH YOU AND DR. SILVA HAVE RECEIVED DEATH THREATS. YOU'RE NOT TO LEAVE THIS OFFICE. I'LL BE BACK IN A FEW MINUTES.

HOURS LATER.



FEAR IS STARTING TO GRIP LOS ANGELES AS FEMA HAS ISSUED A TEMPORARY QUARANTINE FOR PARTS OF THE WEST SIDE, AND ALL TRAFFIC IN OR OUT OF THE QUARANTINE AREA HAS BEEN STOPPED.



THE CITY AND VARIOUS OTHER STATE AND FEDERAL GOVERNMENT AGENCIES HAVE BEEN VISIBLY ACTIVE ALL OVER, BUT HAVE BEEN SEEMINGLY UNABLE TO DO MUCH TO SLOW THE RAPIDLY GROWING WEEDS.



GROWING THROUGH BUILDING WALLS, FOUNDATIONS, AND EVEN CONCRETE SIDEWALKS, THE DAMAGE THESE WEEDS HAVE CAUSED TO INFRASTRUCTURE ALONE IS ESTIMATED IN THE TENS OF MILLIONS AND CLIMBING.



ACCUSATIONS OF THE GOVERNMENT USING ITS RESOURCES TO CLEAN UP THE MORE AFFLUENT AREAS FIRST ARE SURFACING.



THERE ARE MASSIVE EFFORTS UNDERWAY TO CLEAN UP THE RICHER COMMUNITIES WHILE US REGULAR FOLK ARE LEFT WITH THESE DEAD HUSKS PILING UP HIGHER AND HIGHER.



GOVERNMENT OFFICIALS DENY THESE ALLEGATIONS, SAYING THEY'RE FOCUSING EFFORTS ON THE EDGES OF THE AFFECTED AREAS IN A CONTAINMENT STRATEGY.



NOTHING SEEMS TO BE SLOWING IT DOWN THOUGH, AS THE QUARANTINE AREA HAS BEEN WIDENED FOUR TIMES IN THE LAST TWO HOURS ALONE.



MAYOR TONY VELAR URGED PEOPLE TO HEAD HOME AND STAY OFF THE STREETS.

EVERYONE NEEDS TO REMAIN CALM.

KCLA NEWS CONFERENCE ROOM
2:15 PM

IS IT JUST ME, OR DOES FEMA'S QUARANTINE SEEM LIKE A MASSIVE OVERREACTION? THE ZONE IS HOLLYWOOD HILLS TO THE NORTH, THE 105 FREEWAY TO THE SOUTH, BEACHES TO THE WEST, AND THE 5 FREEWAY TO THE EAST. AND WE HAVE REPORTS OF MILITARY AND NATIONAL GUARD UNITS SETTING UP FOR ENFORCEMENT.

THEY'VE SHUT DOWN ALL AIR AND GROUND TRAFFIC IN OR OUT, BUT THEY'RE NOT SAYING HOW THEY PLAN ON STOPPING THE WIND.

MIKHAIL, YOU'RE SUPPOSED TO BE OUR SCIENCE GUY. WHAT THE HELL IS GOING ON?

THE QUICK MOBILIZATION IS THE SECRETARY OF AGRICULTURE'S DOING. SHE PUSHED FOR IMMEDIATE FEMA INTERVENTION. SINCE SHE WAS AN EXECUTIVE AT BIOGENESIS PRIOR TO HER SECRETARIAL APPOINTMENT, CONSPIRACY THEORIES ARE FLYING FAST AND FURIOUS.

BUT WHAT SHE'S SAYING PUBLICLY DOES MAKE SENSE. ACR WASN'T FIELD-TESTED OR FDA APPROVED, AND SHE HAS REAL CONCERNS THAT IT COULD HAVE SOME ECOLOGICAL EFFECTS.

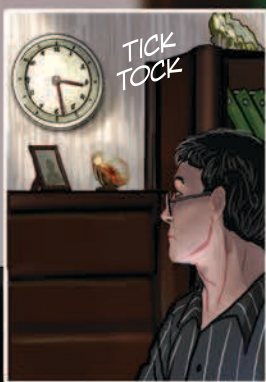
JESUS, MIKHAIL, RUN WITH THAT, BUT CHANGE "SOME" TO "CATASTROPHIC" AND LET'S AIR A SPECIAL SEGMENT DURING PRIME. WE'LL BILL IT AS *GMO: GOD MOVE OVER, SOMEONE WRITE ALL THAT DOWN.*

MICHELLE, ANY LUCK TRACKING DOWN SILVA OR HER PEOPLE FOR COMMENT?

NO, AND A MAN ANSWERED HER CELL AND HUNG UP WHEN I TOLD HIM WHO I WAS.

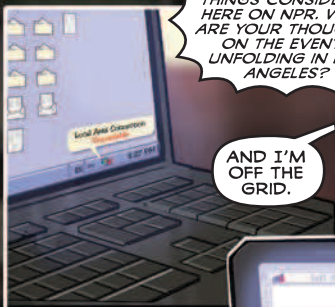
WELL, RUMOR, FEAR, AND CARNAGE ARE GOOD FOR RATINGS. MICHELLE, TAKE SHEILA AND SEE IF YOU CAN GET FOOTAGE OF SOME CRASHES OR SOMETHING WORTH WATCHING.

YOU'VE BEEN LISTENING TO ALL THINGS CONSIDERED ON KCRW. NEXT UP, WE HAVE DR. GERALD LERNER FROM GREEN AWARE JOINING THE PROGRAM.



DR. LERNER, WELCOME TO ALL THINGS CONSIDERED HERE ON NPR. WHAT ARE YOUR THOUGHTS ON THE EVENTS UNFOLDING IN LOS ANGELES?

AND I'M OFF THE GRID.



COMPLETELY.



IT'S THE REALIZATION OF MY GREATEST FEAR. WE'VE RELEASED SOMETHING INTO THE ENVIRONMENT THAT IS CHANGING THE VERY BIOSPHERE ITSELF.

UH...HI. I'VE BEEN WAITING FOR AGENT CHEN FOR ALMOST FIVE HOURS NOW. I'M HUNGRY, HAD TO PEE IN A STARBUCKS CUP, AND NOW YOU'VE OBVIOUSLY BLOCKED MY PHONE AND INTERNET ACCESS. I'D LIKE TO SPEAK TO ONE OF THE UNIVERSITY'S LEGAL STAFF, PLEASE.

UNDER FEMA QUARANTINE YOU'RE NOT ENTITLED TO SPEAK TO COUNSEL.

IS THAT TRUE?

LOOK IT UP ON THE INTERNET.

BUT YOU BLOCKED... NEVER MIND.



THE GOVERNMENT HAS BEEN LESS THAN FORTHCOMING WITH INFORMATION, WHICH IS NEEDLESSLY CAUSING FEAR AND PANIC AMONG THE PEOPLE IN THE QUARANTINE AREA.



3:28 PM

AND
BIOGENESIS.
WHERE ARE
THEY NOW
WHEN THE
SCIENCE THEY
FUND RUNS
AMOK?

WE NEED
TO OPEN OUR
EYES AND SEE
THE SIGNS THAT
ARE CLEARLY
THERE.

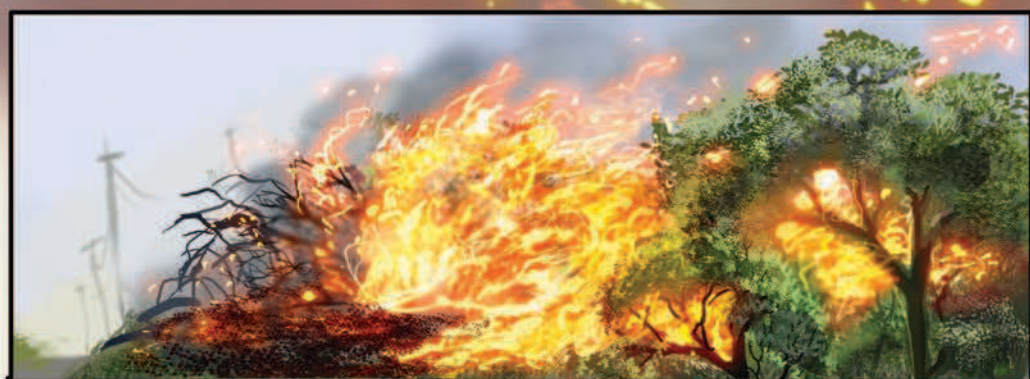
THEY BUY
OUR SCIENTISTS
AND CO-OP
THEIR RESEARCH
TO PURSUE THE
PROFIT MOTIVE,
NOT THE HUMAN
ONE.

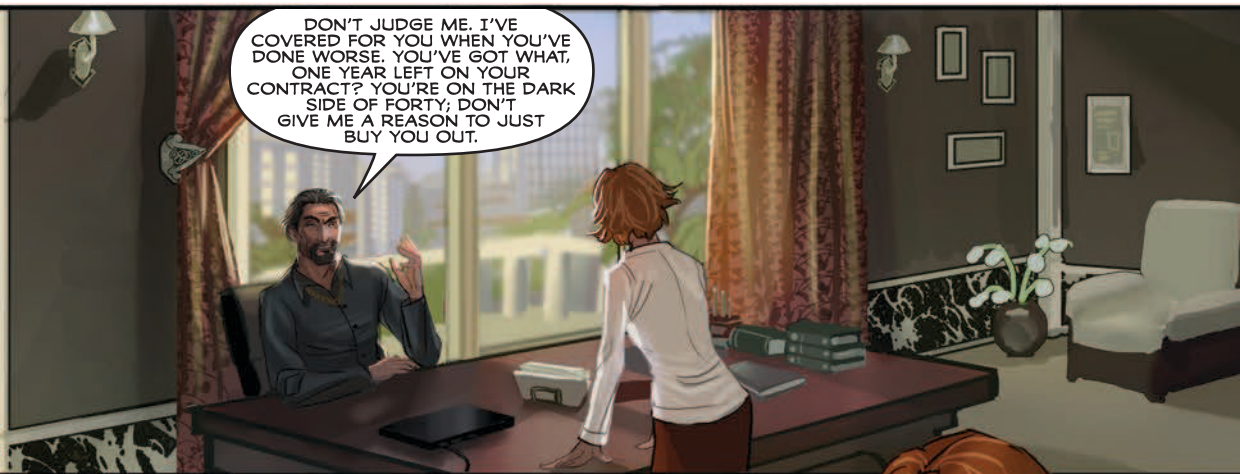
SCREECH

KTTTSHHH

KZZKKKLLLL

SOMETHING
MUST BE
DONE.





3:30 PM
LOYOLA HIGH SCHOOL
VENICE BLVD



HEY,
ASH.



HEY,
VIOLET.



FIGURES YOU'D
BE PICKING
ME UP.

WHY DO
YOU SAY
THAT?

EVERYONE'S
TALKING ABOUT
THE QUARANTINE
AND MY MAD
SCIENTIST
BROTHER.



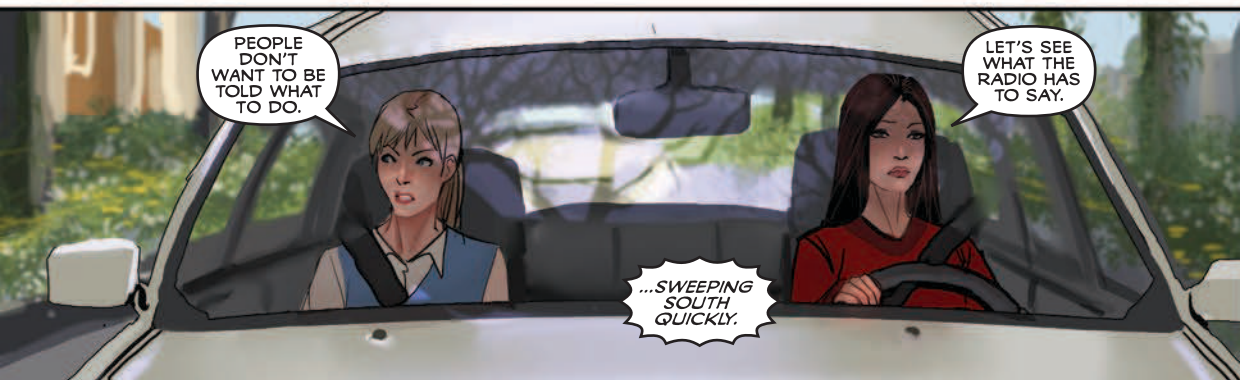
HE'S NOT VICTOR
FRANKENSTEIN. YOU
SHOULDN'T TALK
ABOUT HIM LIKE
THAT.

YOU JUST DEFEND
HIM BECAUSE YOU
WANT HIS BOD...AND
I DO NOT KNOW
WHY. LOOK AT THE
MESS HE MADE.



TRAFFIC IS BAD. WE
SHOULD HEAD TO
YOUR PLACE AND
WAIT FOR DAN.

HARD TO BELIEVE THERE'S
SO MUCH TRAFFIC SINCE
PEOPLE ARE SUPPOSED TO
GO HOME AND STAY
THERE.



PEOPLE
DON'T
WANT TO BE
TOLD WHAT
TO DO.

LET'S SEE
WHAT THE
RADIO HAS
TO SAY.

...SWEEPING
SOUTH
QUICKLY.



WE INTERRUPT THIS
PROGRAM TO ACTIVATE
THE EMERGENCY ALERT
SYSTEM FOR LOS
ANGELES COUNTY.

EVACUATION
SOUTH OF THE
LOS ANGELES
RIVER HAS BEEN
ORDERED...



THIS IS
NOT A
TEST.





...FOR ALL
RESIDENTS IN
AFFECTED
AREAS OF WEST
LA COUNTY
INCLUDING
DOWNTOWN
LA...



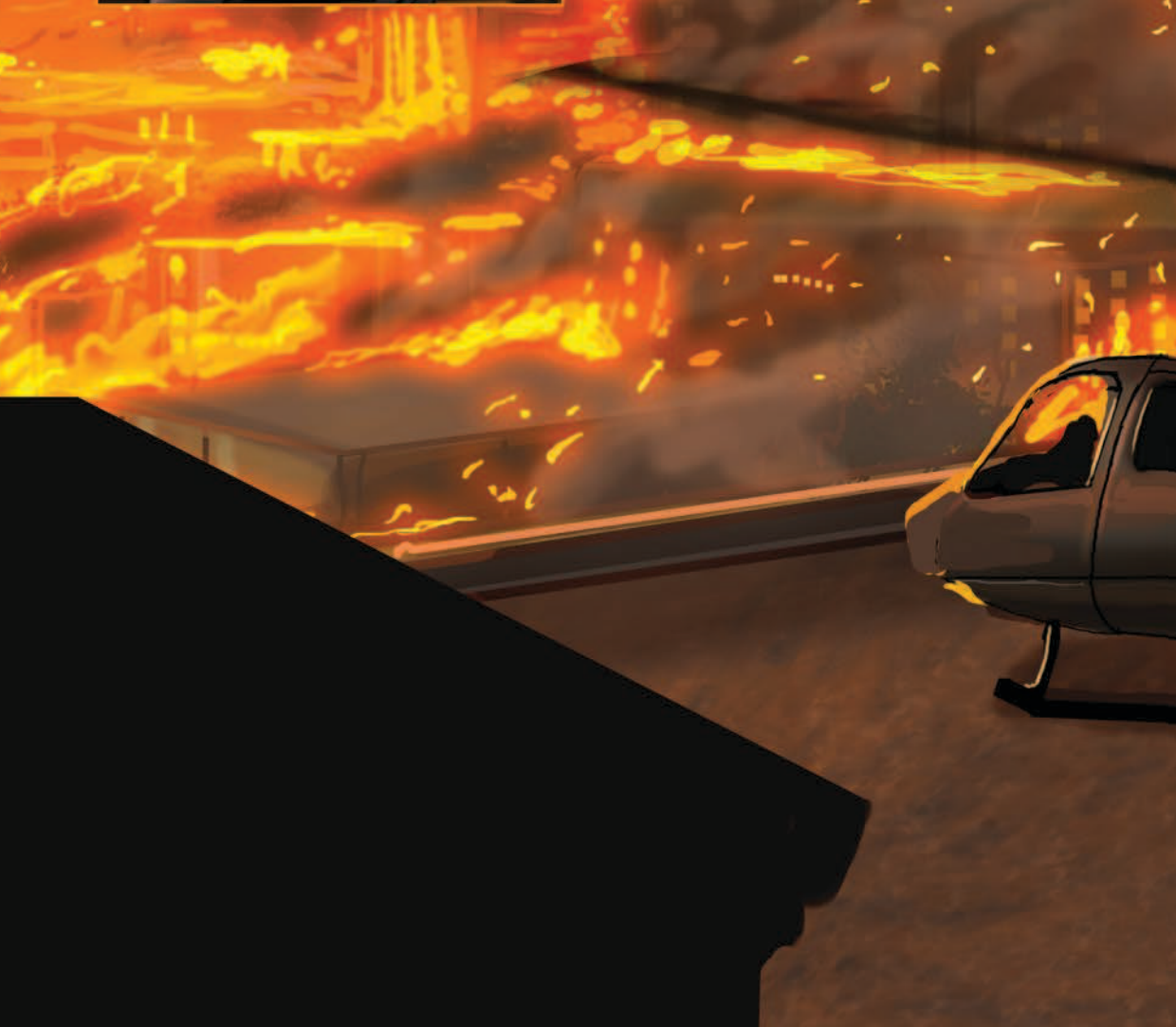
...BEVERLY
HILLS AND
SURROUNDING
AREAS.



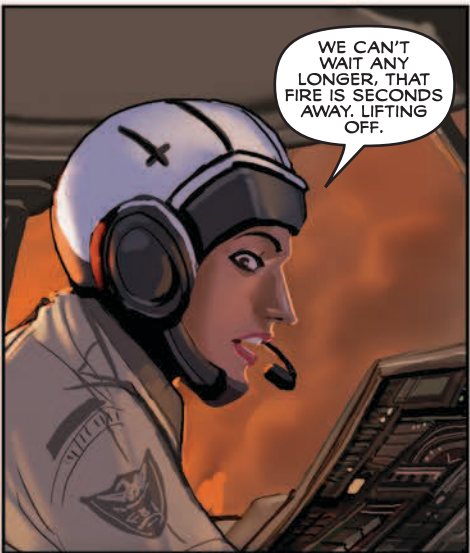




3:50 PM









Chapter Three





"An ecosystem, you can always intervene and change something in it, but there's no way of knowing what all the downstream effects will be or how it might affect the environment. We have such a miserably poor understanding of how the organism develops from its DNA that I would be surprised if we don't get one rude shock after another."

Professor Richard Lewontin, Professor of Genetics,
Harvard University

"But we realize that with any new and powerful technology with unknown, and to some degree unknowable - by definition - effects, then there necessarily will be an appropriate level at least, and maybe even more than that, of public debate and public interest."

Bob Shapiro, Chief Executive of Monsanto



THIS IS MICHELLE CRAWFORD FOR KCLA NEWS. LOS ANGELES IS ON FIRE. FROM DOWNTOWN TO MIDTOWN TO THE BEACH CITIES THE WHOLE CITY IS ENGLUFED IN FLAMES WITH VERY LITTLE CONTAINMENT REPORTED AS OF YET.



EMERGENCY SERVICES ARE OVERWHELMED AS EVACUATIONS CONTINUE TO CONTAINMENT AREAS. CASUALTIES ARE EXPECTED TO BE IN THE HUNDREDS OF THOUSANDS AS WHAT WAS ONCE THE CITY OF ANGELS IS NOW A CITY OF ASH.



OKAY, MY TURN.



WHAT? THAT WAS LIVE, DEAR. WE DON'T NEED YOU TO DO ANOTHER ONE. YOU'RE HERE TO OBSERVE AND LEARN.



THAT'S NOT WHAT BOB SAID. TELL HER, J.J.

UH, SHEILA, YEAH, BOB SAID FOR HER TO SHOOT AS WELL. THEY'LL USE HERS ON THE WEB SITE.



THIS IS SHEILA TODD FOR KCLA NEWS. LOS ANGELES IS ON FIRE. FROM DOWNTOWN TO MIDTOWN TO THE BEACH CITIES -- THE WHOLE CITY IS ENGULFED IN FLAMES WITH VERY LITTLE CONTAINMENT REPORTED AS OF YET.

EMERGENCY SERVICES ARE OVERWHELMED AS EVACUATIONS CONTINUE TO CONTAINMENT AREAS. CASUALTIES ARE EXPECTED TO BE IN THE HUNDREDS OF THOUSANDS AS WHAT WAS ONCE THE CITY OF ANGELS IS NOW A CITY OF ASH.



MY EXACT WORDS.



MY HAIR LOOK OKAY IN THAT?

YOU LOOK GREAT.



PEOPLE ARE DYING AND YOU'RE WORRIED ABOUT YOUR HAIR?

HEY, NOT ALL OF US CAN GET AWAY WITH THE MOTHERLY LOOK.

EXCUSE ME?



**CALIFORNIA INSTITUTE OF TECHNOLOGY
PASADENA, CALIFORNIA
6 AM NEXT DAY**



DR. MARCUS,
WELCOME TO LOS ANGELES.
THE CITY IS A MESS.
CASUALTIES COULD BE IN THE
MILLIONS. ELECTRICITY, CABLE,
CELLULAR, WATER...ALL
DOWN...WE'VE ESTIMATED IT
WILL TAKE WEEKS TO GET
BASIC SERVICES BACK UP
AND RUNNING.

WE'VE BEEN
BROADCASTING AND
DROPPING PAMPHLETS
TELLING PEOPLE TO
EVACUATE BUT A LOT
OF PEOPLE ARE INSIDE
THEIR HOMES WHERE
WE TOLD THEM TO GO
BEFORE THE FIRE
BROKE OUT.



THAT, FOLLOWED BY
THE COMMUNICATIONS
BLACK OUT, MEANS A
WHOLE LOT OF PEOPLE
DON'T KNOW TO
EVACUATE AND ARE
STILL IN THE ZONE.

THANKS FOR THE
UPDATE, AGENT CHEN.
SINCE CAL TECH HAS
ITS OWN GENERATOR
WE SHOULD BE FINE
HERE UNLESS WE NEED
TO MOVE AGAIN.

THE PRESIDENT
HAS GIVEN ME
FULL SITUATIONAL
AUTHORITY WITH MY
FEMA TEAM. COLONEL
DAVIS HAS BEEN
ASSIGNED AS LIAISON
FOR THE MILITARY.

HAS THERE BEEN
ANY WORD ON DR. SILVA?



SHE'S BEEN CONFIRMED
DEAD. HER NUMBER TWO,
DR. DAN MILLER, IS HERE
IF YOU WANT TO TALK
TO HIM.

YES, HAVE
DR. MILLER SENT
UP TO GIVE US A
COMPLETE BRIEFING.
I'VE READ THE
REPORTS BUT I'D LIKE
TO HEAR IT FROM
HIS MOUTH.



SOUNDS
GOOD,
SAY AN
HOUR?

PERFECT.

8AM

OVERNIGHT FIRE CREWS AND EMERGENCY SERVICES REPORT 50% CONTAINMENT IN THE AFFECTED AREAS BUT FIRE CONTINUES TO SPREAD. PLANTS CONTINUE TO GROW OUT OF CONTROL IN THE QUARANTINE ZONE PROVIDING FURTHER FUEL FOR THIS RAGING INFERNO.



THE DAMAGE IS INCALCULABLE AT THIS POINT. SOME ARE SAYING ON THE VERGE OF TRILLIONS OF DOLLARS. MANY DID NOT RECEIVE THE EVACUATION ORDER AND REMAINED IN THEIR HOMES UNABLE TO ESCAPE THE FIRE'S PATH.



OF THOSE THAT SURVIVED, TENS OF THOUSANDS ARE HOMELESS AND HAVE FLED TO THE BEACH AREAS. SURVIVORS ARE BEARING EVEN MORE DEGRADATIONS, AS THEY ARE BEING SHUFFLED TO DECONTAMINATION CAMPS TO ENSURE THEY DON'T HAVE INFECTED POLLEN OR PLANT RESIDUE IN THEIR HAIR OR CLOTHING.

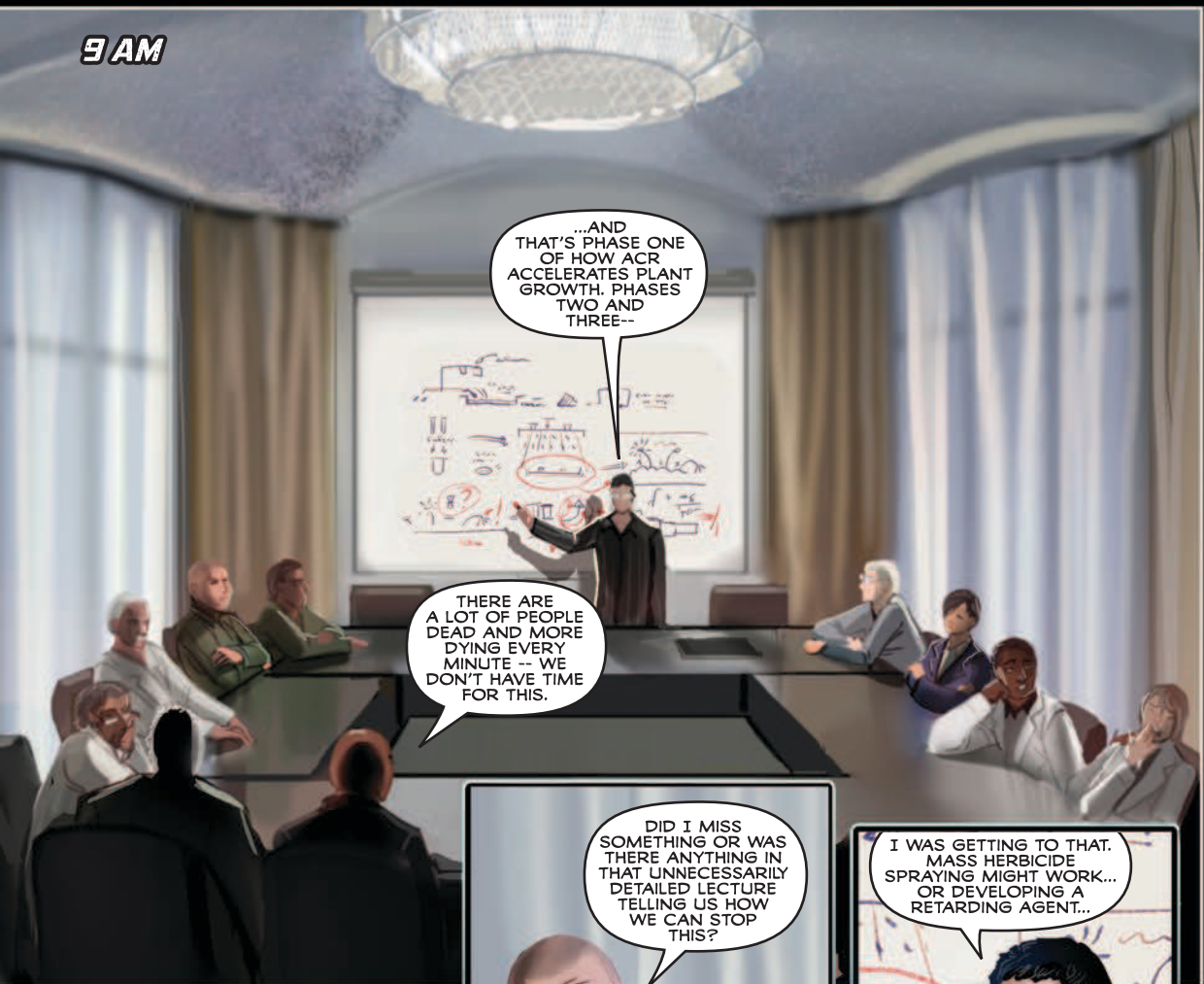


THE FDA, FBI, CDC AND FEMA HAVE CREATED A COMMAND CENTER HERE AT CAL TECH IN PASADENA WHICH HAS THUS FAR BEEN SPARED FROM FIRE AND OUTSIDE OF THE RAPIDLY EXPANDING QUARANTINE ZONE.

I'M SHEILA TODD, REPORTING LIVE FOR KCLA NEWS. WE'LL KEEP YOU UPDATED WITH EVENTS AS THEY UNRAVEL.



9 AM



...AND THAT'S PHASE ONE OF HOW ACR ACCELERATES PLANT GROWTH. PHASES TWO AND THREE--

THERE ARE A LOT OF PEOPLE DEAD AND MORE DYING EVERY MINUTE -- WE DON'T HAVE TIME FOR THIS.



ALL OF THOSE WOULD TAKE TOO LONG AND NONE OF THEM ARE GUARANTEED TO WORK. WE NEED RESULTS...AND VERY QUICKLY BEFORE MORE DRASTIC MEASURES NEED TO BE TAKEN.



DID I MISS SOMETHING OR WAS THERE ANYTHING IN THAT UNNECESSARILY DETAILED LECTURE TELLING US HOW WE CAN STOP THIS?



I WAS GETTING TO THAT. MASS HERBICIDE SPRAYING MIGHT WORK... OR DEVELOPING A RETARDING AGENT...

...OR MAYBE INTRODUCING AN AGGRESSIVE HYBRID PLANT SPECIES WITH NORMAL GROWTH THAT COULD OUTBREED THE ACR INFECTED PLANTS.



PUT ME IN A LAB AND I'LL SEE WHAT I CAN COME UP WITH.



YOU'VE DONE ENOUGH DAMAGE. I'M DONE WITH THIS GUY. DR. MARCUS, LET'S TALK TO YOUR OTHER EXPERTS.



HOLD UP A SECOND.

ALL I EVER WANTED WAS TO HELP FEED THE WORLD, TO MAKE A DIFFERENCE. NOW I'M THE VILLAIN.

DAN, YOU NEED TO GET OVER YOURSELF. PEOPLE ARE DYING.

YOU DON'T THINK I KNOW THAT? MY SISTER IS SOMEWHERE IN THE QUARANTINE ZONE...IF SHE'S EVEN ALIVE.



SHE'S WITH VIOLET, DR. SILVA'S DAUGHTER, WHO DOESN'T EVEN KNOW THAT *HER* MOM IS DEAD.

DAN, I'LL FIND YOU SOME LAB SPACE; HELP US AND YOU CAN HELP THEM.

I KNOW. I'M SORRY. I JUST FEEL SO USELESS.

EVERY TIME I THINK ABOUT WHAT'S HAPPENED I FREEZE UP.

I JUST... DON'T KNOW WHAT TO DO.

NO ONE ELSE DOES EITHER SO QUIT BEATING YOURSELF UP. YOUR SISTER HAS TO HAVE SOME OF YOUR SMARTS. I'M SURE SHE'S FINE.

11 AM

WELL, AT LEAST THIS BUILDING HAS EMERGENCY POWER AND WE'RE NOT SITTING HERE IN THE DARK.

WE'VE BEEN DOWN HERE FOR WHAT, 15 HOURS? WHY DON'T WE HEAD OUTSIDE AND TAKE A LOOK AROUND? THAT CANDY BAR WE SPLIT DIDN'T LAST LONG. I'M HUNGRY.

AGREED, LET'S GET MOVING. WE'RE NOT GETTING RADIO HERE UNDERGROUND ANYWAY; I'D LIKE TO FIND OUT WHAT'S GOING ON.

WE'LL HEAD TO YOUR PLACE AND GRAB SOME FOOD AND WATER. WE CAN FIGURE OUT WHAT TO DO ONCE WE GET THERE.

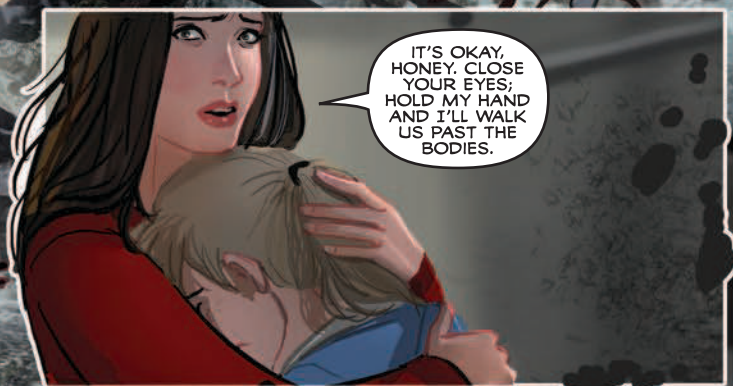
THE ENTRANCE IS BLOCKED. WE WON'T BE ABLE TO DRIVE.

WE CAN WALK; IT'S NOT THAT FAR.

DO YOU THINK DAN AND YOUR MOM ARE GOING TO GET IN TROUBLE FOR ALL THIS?

I DON'T KNOW... I HOPE NOT.

IT'S NOT REALLY THEIR FAULT.



11:40 AM

ALMOST
THERE. JUST
A FEW MORE
BLOCKS.

CRACKLE

WATCH
OUT! THE
ROAD IS CAVING
IN!



RRRRUNNABLE

12:40 PM



OKAY,
SHEILA,
YOUR
TURN.

AS IF L.A.
DIDN'T HAVE ENOUGH
TO DEAL WITH, AN
EARTHQUAKE WITH
A MAGNITUDE OF 4.7
STRUCK JUST EAST
OF WESTWOOD
ABOUT AN HOUR
AGO.

SEVERAL SMALLER
AFTERSHOCKS HAVE
ALREADY BEEN
REPORTED AND WE'VE
BEEN TOLD MORE ARE
EXPECTED.

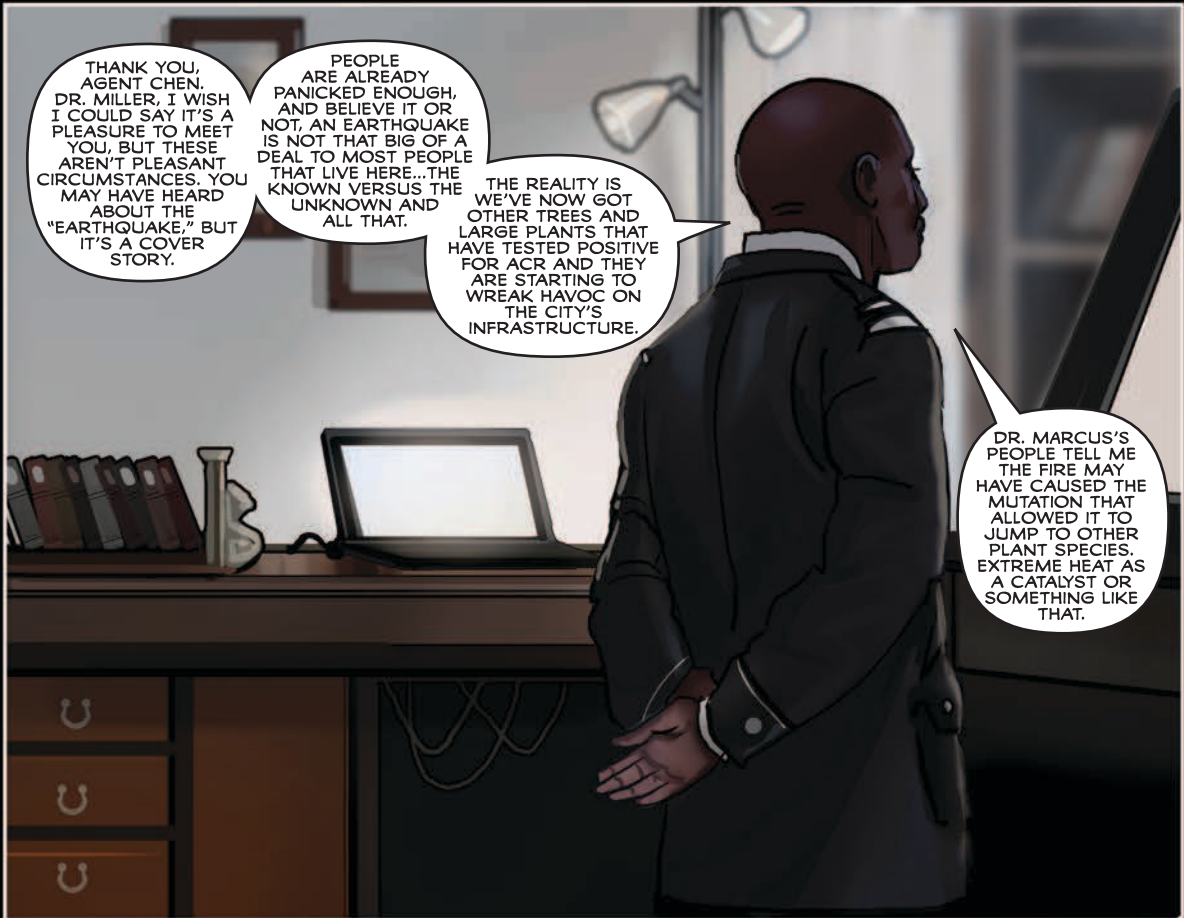
THESE QUAKES
HAVE NOT EASED THE FIRE
SITUATION AND RESPONDERS
ARE REPORTING NEW
OUTBREAKS AND A SETBACK
TO 40% CONTAINMENT
DESPITE INCREASED USE OF
PLANES AND DRONES TO
DROP FIRE RETARDANT
CHEMICALS.



THE CITY
CONTINUES TO TAKE
A BEATING AND
EVACUATIONS HAVE
BEEN STEPPED UP FROM
ALL BORDERS OF THE
QUARANTINE
ZONE.

FOR THOSE OF
YOU WITH ACCESS TO
MEDIA INSIDE THE ZONE
PLEASE COMMUNICATE THE
EVACUATION ORDER TO
YOUR NEIGHBORS AND
ANYONE YOU SEE AS MANY
HAVE NOT RECEIVED THIS
NEWS YET.

THAT'S ALL
FOR NOW, I'M
SHEILA TODD
REPORTING
FOR KCLN
NEWS.



TAKE
A LOOK
AT THIS
MAP.

THE RED
AREAS ARE WHAT'S
STILL ON FIRE OR
COMPLETELY BURNED
OUT... THE YELLOW
THE EXTENDED AREA
TESTING POSITIVE
FOR ACR.

THE SITUATION HAS GONE
FROM BAD TO POTENTIALLY
CATASTROPHIC. THE
NECESSARY QUARANTINE
ZONE CONTINUES TO
EXPAND AND ALL OUR
ATTEMPTS TO SLOW IT
HAVE FAILED.

THERE IS A GROWING FEAR THAT
THIS MAY SPREAD RAPIDLY ACROSS
THE COUNTRY AND POTENTIALLY
THE WORLD. AT THIS POINT, THE
PRESIDENT HAS APPROVED SOME
EXTREME MEASURES FOR
CONTAINMENT.

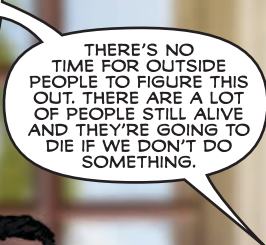
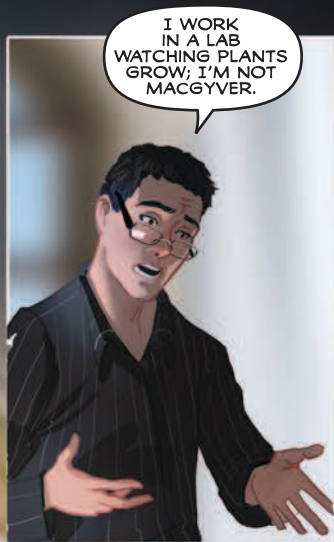
WE'VE BEEN GIVEN
12 HOURS TO GET IT
UNDER CONTROL OR
THE MILITARY WILL
BEGIN CLEANSING
THE AREA.

CLEANSING...
WHAT DOES THAT
MEAN?

WE'LL START
WITH THERMITE
AND WORK OUR
WAY UP FROM
THERE.

WE MAY NOT
HAVE A CHOICE. THIS
INNER AREA SHOWS
THE AFFECTED AREA
OF THE MUTATED
LARGER PLANTS AN
HOUR AGO AND THE
OUTER ONE SHOWS
IT NOW.

I REALLY
DON'T WANT TO
DESTROY L.A. I
WAS HOPING
YOU MIGHT HAVE
SOME IDEA ON
AN ALTERNATIVE
SCENARIO.



1:15 PM

IT'S SO WEIRD
THIS WHOLE AREA
SEEMS ABANDONED.
LIKE NO ONE LIVES
HERE ANYMORE.

YEAH, NO CARS
ON THE ROAD. NO
PEOPLE. THEY'VE ALL
BEEN EVACUATED,
IT SEEMS.

AT LEAST
THERE AREN'T ANY
MORE BODIES. THAT
WAS HORRIBLE.

I KNOW.
I'M SORRY
YOU HAD
TO SEE
THAT.

WELL,
WE'RE HERE
AND THE PLANT
OVERGROWTH
ISN'T THAT
BAD.

HELP ME
CLEAR THE
ENTRANCE.

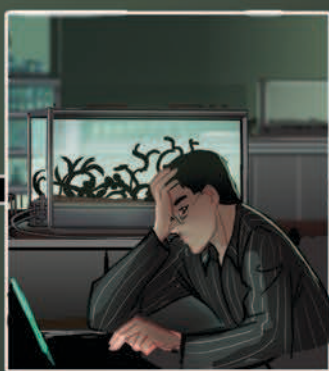
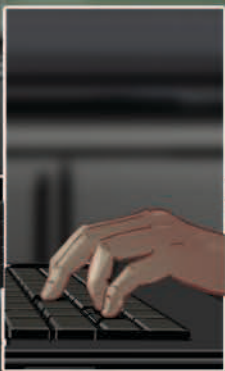
THERE'S
A REASON
NO ONE'S
HERE.

WE
SHOULD GET
IN AND OUT
QUICKLY.

WOW,
THERE'S NO
DAMAGE.

YEAH, LUCKY,
I GUESS. THANK
YOUR BROTHER'S
OCD NEATNESS
AND OVERUSE
OF BLEACH.

3:45 PM



DAN.

AHH!

HEY BUD,
SORRY TO
STARTLE
YOU.

MICK!
YOU'RE ALIVE.
IT'S SO
GOOD TO SEE
YOU.

I'M A
LITTLE LATE
TO THE PARTY, I KNOW.
MILITARY JUST
CLEARED ME. THEY
BROUGHT ME HERE
TO HELP YOU,
ALTHOUGH I DON'T
KNOW MUCH
ABOUT WHAT'S
GOING ON.

THAT'S
GREAT
NEWS.

I'VE
BEEN TRYING
TO DEVELOP
A COUNTERING
AGENT THAT
WOULD SLOW
GROWTH.



BUT IT
TOOK FIVE YEARS
TO DEVELOP ACR
AND WE NEED A
EUREKA MOMENT
IN HOURS TO
REVERSE IT, OR
THEY'RE GOING TO
DESTROY THE
CITY.



RRRRRLN



RRRRRRMMMMMM



IS THAT
ANOTHER
EARTHQUAKE?

THERE'S NO
QUAKE, THAT WAS THEIR
COVER STORY. ACR JUMPED
TO LARGER PLANTS WITH
A MUTATION CAUSED BY
THE EXTREME HEAT FROM
THE FIRE...AT LEAST THAT'S
THE THEORY. ROOTS ARE
GROWING OUT OF CONTROL
UNDER THE CITY'S
FOUNDATION.

WE'RE
EVACUATING,
PUSHING THE
COMMAND
CENTER TO
EDWARDS.



THIS
STUFF IS
GROSS.

BUT FOOD IS FOOD, AND
WE SHOULD PACK SOME
NON-PERISHABLE STUFF--
WHO KNOWS HOW LONG
WE'LL BE WITHOUT--

KRAKKKX

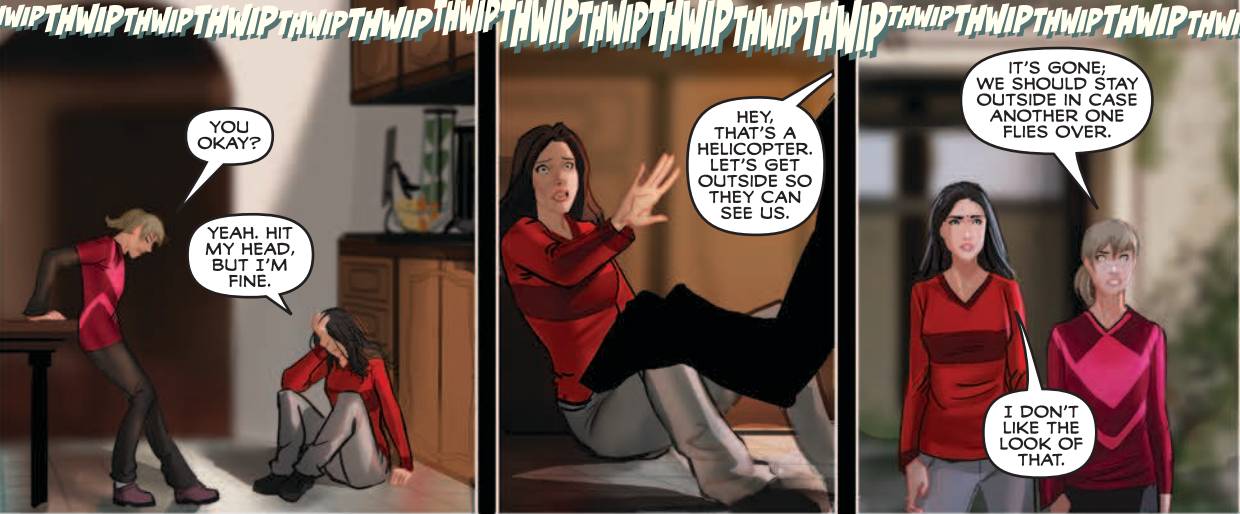
WHAT'S
THAT?

RRRRRRMMMMMMBBBBL

WE
HAVE TO
GET OUT
OF HERE.



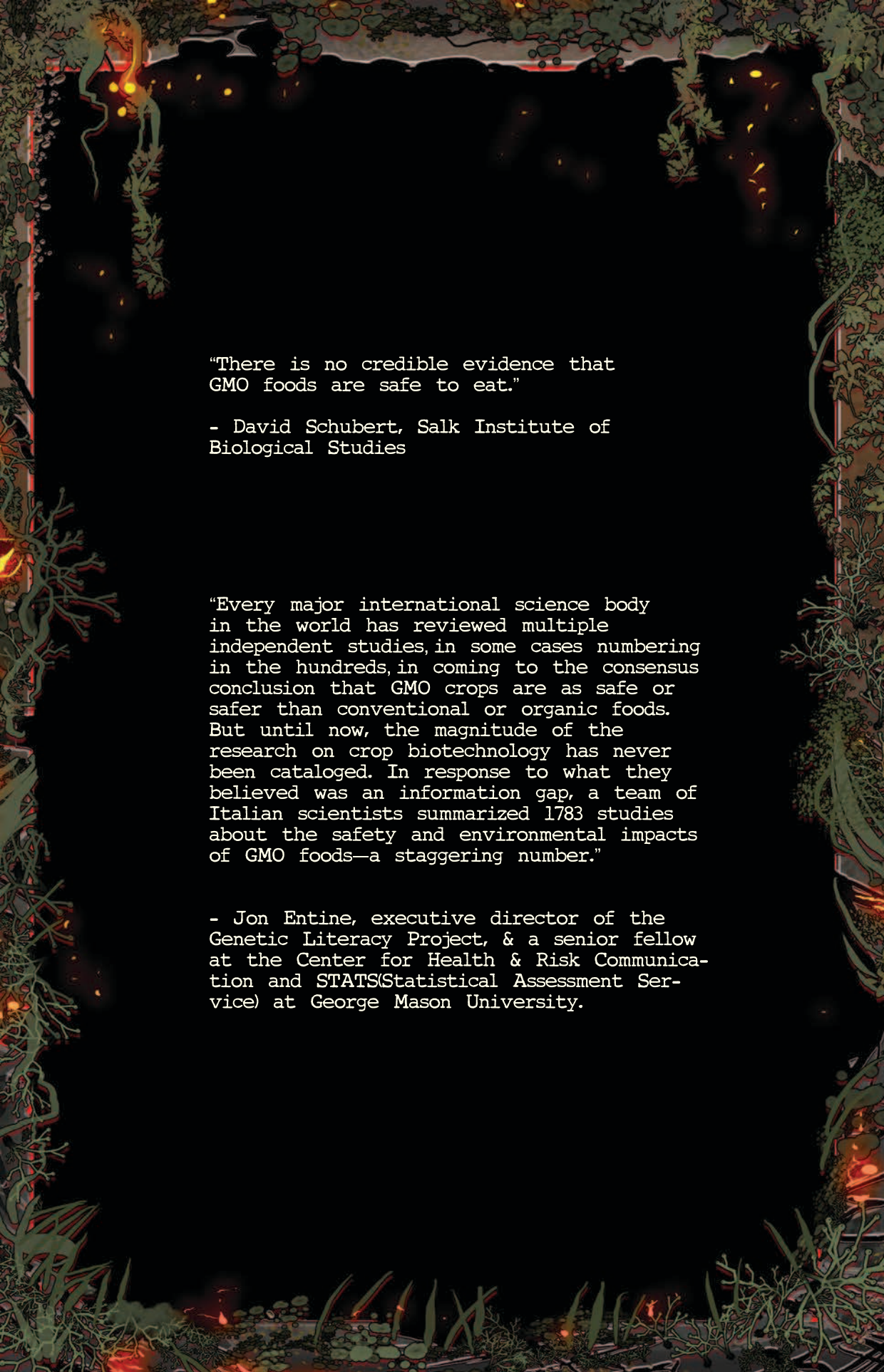






Chapter Four





"There is no credible evidence that
GMO foods are safe to eat."

- David Schubert, Salk Institute of
Biological Studies

"Every major international science body
in the world has reviewed multiple
independent studies, in some cases numbering
in the hundreds, in coming to the consensus
conclusion that GMO crops are as safe or
safer than conventional or organic foods.
But until now, the magnitude of the
research on crop biotechnology has never
been cataloged. In response to what they
believed was an information gap, a team of
Italian scientists summarized 1783 studies
about the safety and environmental impacts
of GMO foods—a staggering number."

- Jon Entine, executive director of the
Genetic Literacy Project, & a senior fellow
at the Center for Health & Risk Communica-
tion and STATS (Statistical Assessment Ser-
vice) at George Mason University.

4:15 PM

VIOLET,
HELP!

ASHLEY!

HOLD
ON.

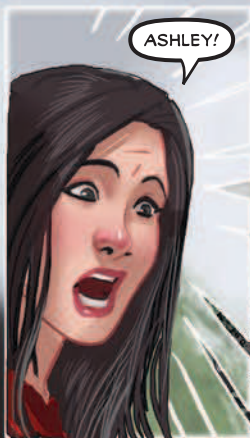
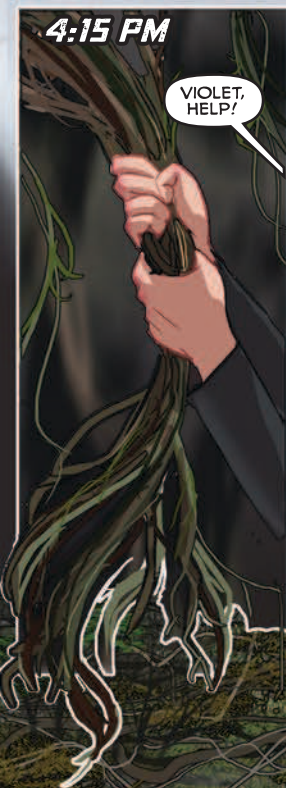
GRAB MY
HAND.

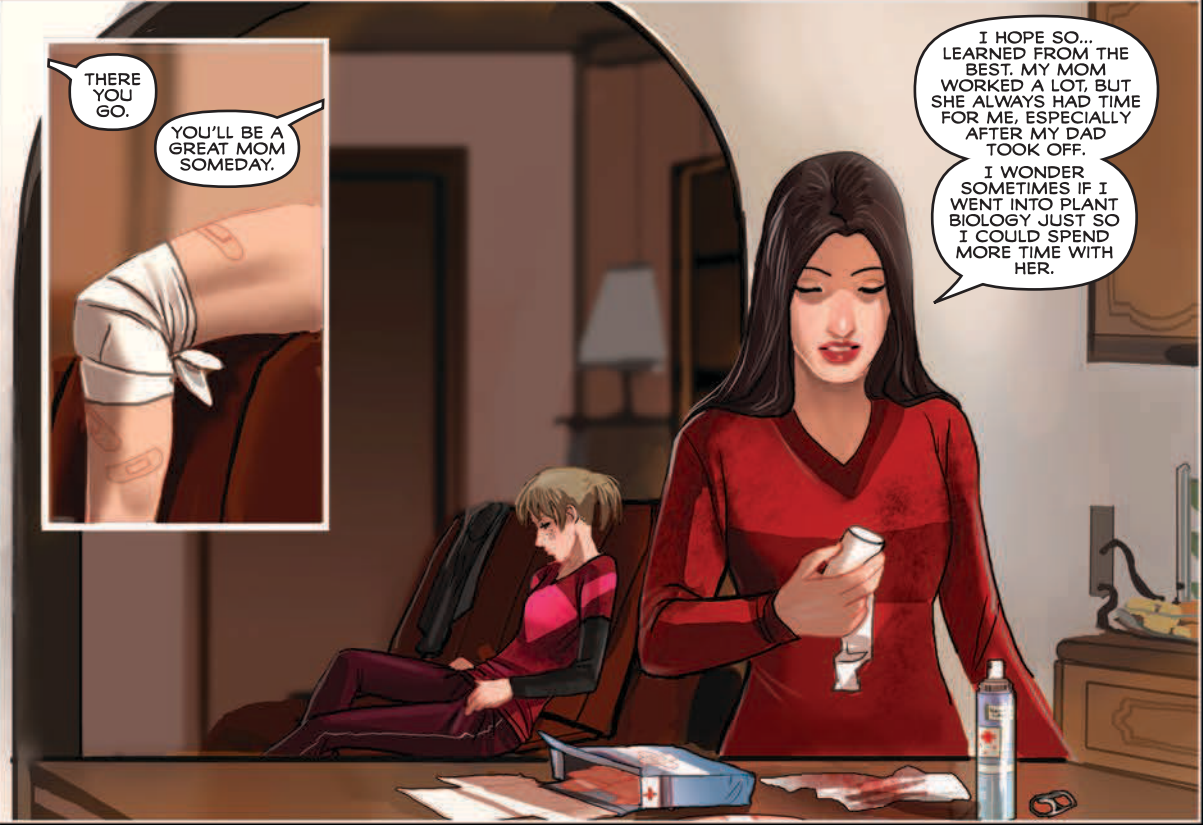
OH MY GOD,
THANK YOU! I
WAS SO SCARED...
THOUGHT I WAS
GOING TO
DIE.

ARE YOU
HURT?

SCRAPED
MY LEG A
LITTLE, BUT
I'M OKAY.

LET'S
GO BACK
INSIDE, AND
I'LL FIX THAT
UP.





THERE YOU GO.

YOU'LL BE A GREAT MOM SOMEDAY.

I HOPE SO...
LEARNED FROM THE BEST. MY MOM WORKED A LOT, BUT SHE ALWAYS HAD TIME FOR ME, ESPECIALLY AFTER MY DAD TOOK OFF.

I WONDER SOMETIMES IF I WENT INTO PLANT BIOLOGY JUST SO I COULD SPEND MORE TIME WITH HER.



WE SHOULD GET GOING. I'M NOT SURE WHAT'S GOING ON, AND WITH THE SINKHOLES, FIRE, AND EARTHQUAKES, I DON'T THINK IT'S SAFE TO WAIT HERE FOR DAN. THIS AREA HAS BEEN EVACUATED FOR A REASON.

KRACKLE



LET'S LEAVE HIM A NOTE IN CASE HE SHOWS AND HEAD TO THE BEACH LIKE WE TALKED ABOUT.



DO YOU THINK DAN AND YOUR MOM ARE OKAY?

Heading for Santa Monica Pier.
Astley and I are fine.
Love, Nidia.

THEY'RE THE TWO SMARTEST PEOPLE I KNOW. I'M SURE THEY'RE FINE.

4:15 PM

ALL UNITS
EVACUATE
IMMEDIATELY.

RRRRRUNNIN'!

FORWARD
GROUP TO
EDWARDS AIR
FORCE BASE.

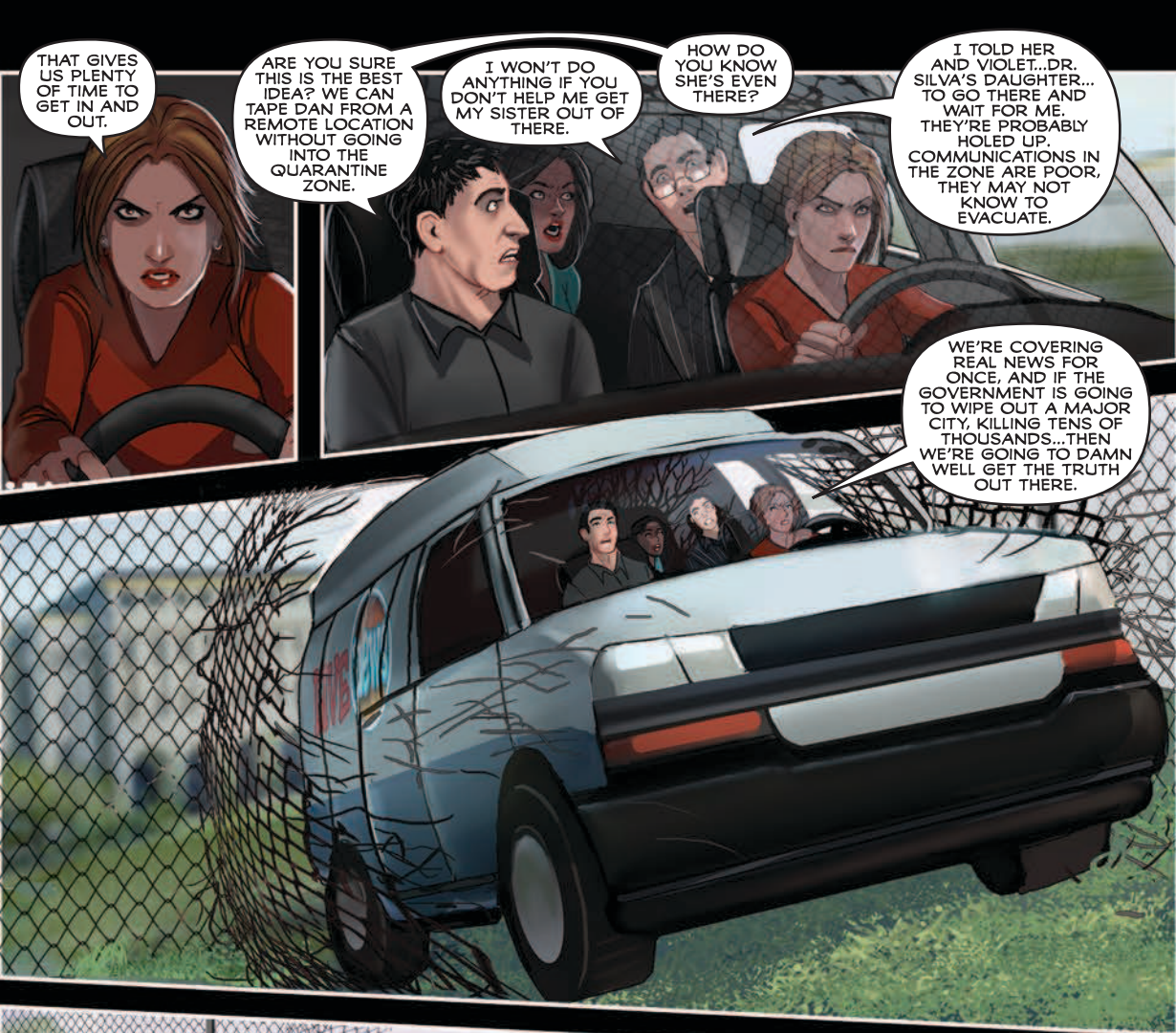
RRRRRRUNNABLE

SECONDARY
TO NELLIS.

DAN, HOW DO YOU KNOW THEY'LL BOMB LOS ANGELES AND THAT THE EARTHQUAKE ARE A COVER STORY?

THEY TOLD ME
FLAT OUT. THEY MAY NOT
HAVE A CHOICE. DESERTS
SURROUND THE CITY, WHICH IS
HELPING CONTAIN THE SPREAD
OF THE INFECTED PLANTS, BUT
THEY WILL COVER THE GLOBE
IN DAYS IF IT ISN'T
STOPPED.

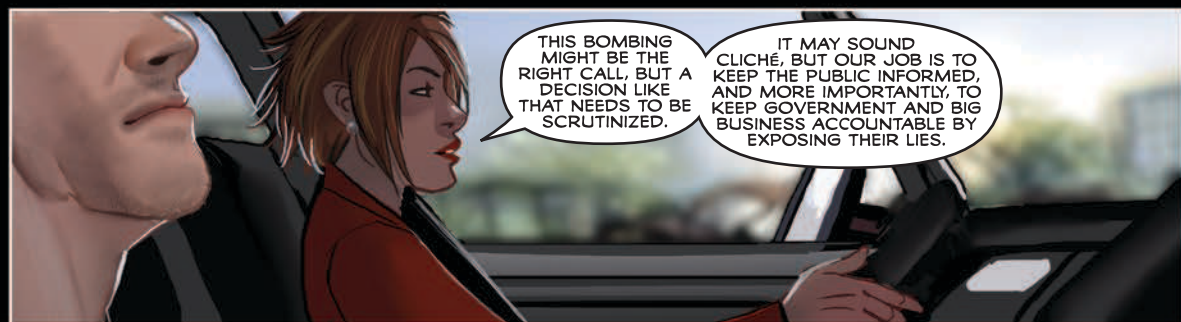
THEY ISSUED
A DEADLINE OF
1A.M. TONIGHT IF
THEY CAN'T
GET IT UNDER
CONTROL.





WHAT THE HELL, MICHELLE? ARE YOU TRYING TO GET ME KILLED?

NO ONE FORCED YOU IN THE VAN, SHEILA. MAYBE YOU SHOULD ASK YOURSELF WHY YOU WANT TO BE A REPORTER. I'M TIRED OF ABANDONING REAL REPORTING IN FAVOR OF SENSATIONAL HEADLINES AND RIDICULOUS LISTICLES.



THIS BOMBING MIGHT BE THE RIGHT CALL, BUT A DECISION LIKE THAT NEEDS TO BE SCRUTINIZED.

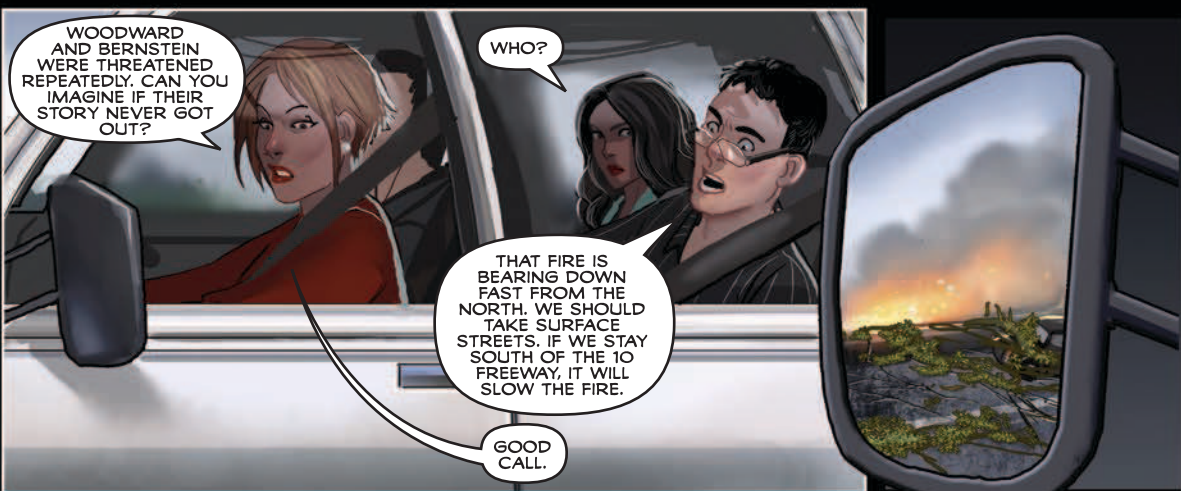
IT MAY SOUND CLICHÉ, BUT OUR JOB IS TO KEEP THE PUBLIC INFORMED, AND MORE IMPORTANTLY, TO KEEP GOVERNMENT AND BIG BUSINESS ACCOUNTABLE BY EXPOSING THEIR LIES.



"IF IT BLEEDS IT LEADS" HAS LONG BEEN THE RATINGS RALLY CRY, BUT NEWS TODAY HAS DEVOLVED EVEN FURTHER TO ACCOMMODATE THE SOCIAL MEDIA WORLD, AND I'M TIRED OF IT.



THOSE WHO REPORT THINGS THAT NEED TO BE SEEN ARE OFTEN IN DANGER FROM THOSE THAT DON'T WANT IT SEEN.



WOODWARD AND BERNSTEIN WERE THREATENED REPEATEDLY. CAN YOU IMAGINE IF THEIR STORY NEVER GOT OUT?

WHO?

THAT FIRE IS BEARING DOWN FAST FROM THE NORTH. WE SHOULD TAKE SURFACE STREETS. IF WE STAY SOUTH OF THE 10 FREEWAY, IT WILL SLOW THE FIRE.

GOOD CALL.





I REALIZE YOU MIGHT BE LOOKING FOR SOMETHING TO GIVE YOUR LIFE MEANING IN YOUR TWILIGHT YEARS, BUT I DIDN'T SIGN ON FOR THIS TO PUT MY LIFE IN DANGER.



CAN WE KNOCK THIS CRAP OFF? BOTH OF YOU. WE'RE INSIDE THE QUARANTINE ZONE, PROBABLY THE ONLY NEWS TEAM HERE. I RESPECT YOUR JOURNALISTIC INTEGRITY, BUT WE CAN'T REPORT THE TRUTH IF WE'RE DEAD.



LET'S GET TO DAN'S PLACE, GRAB HIS SISTER, SHOOT SOME B-ROLL, AND GET THE HELL OUT OF HERE AS FAST AS WE CAN.



NO, WE NEED TO GO BACK **NOW!**



THERE IS NO HEADING BACK.

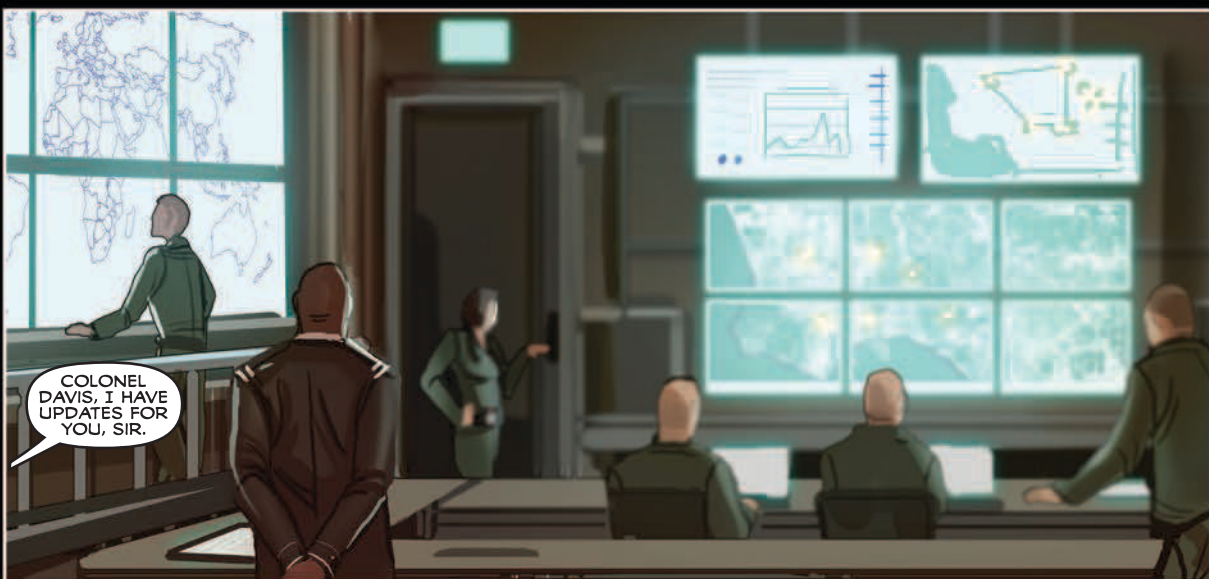


YOU CAN GET OUT AND WALK IF YOU WANT.

LOOK OUT!

KRASSSH

EDWARDS AIR FORCE BASE
90 MILES FROM QUARANTINE ZONE
4:30 PM

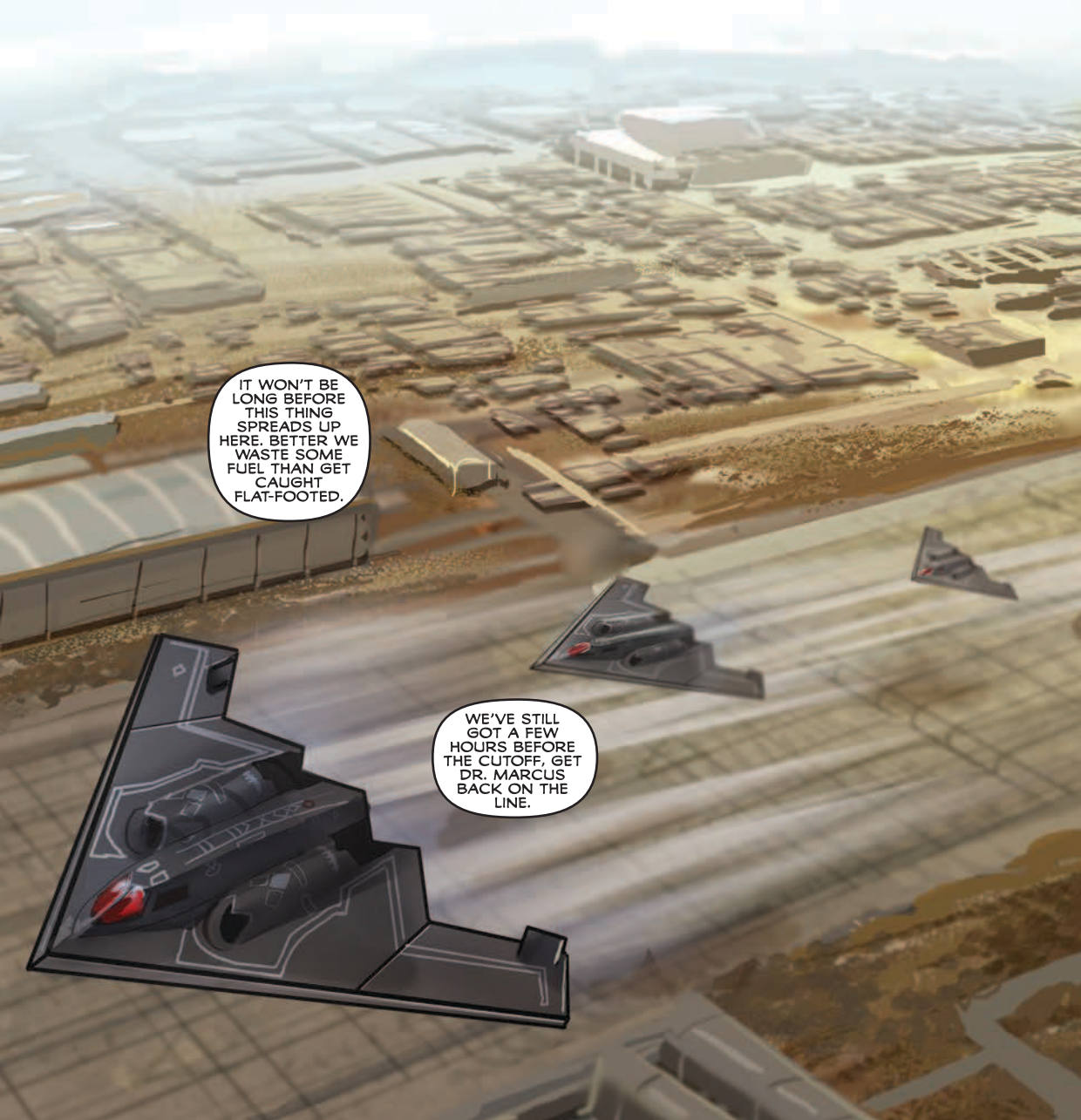


COLONEL DAVIS, I HAVE UPDATES FOR YOU, SIR.

WE'VE CONFIRMED FAILURE FOR ALL SEVEN FIELD-TESTS, INCLUDING THE WEED KILLER DEVELOPED BY DR. MARCUS'S TEAM. THE PLANT GROWTH IS STILL OUTPACING CONTAINMENT EFFORTS, AND THE ZONE CONTINUES TO EXPAND. THE LARGER TREE GROWTH HAS KNOCKED DOWN MOST OF THE SKYSCRAPERS ON THE WEST SIDE. CENTURY CITY IS GONE COMPLETELY...

...AND THE 10 FREEWAY EAST OF THERE HAS COLLAPSED AS WELL.

THAT WAS THE LAST FEED WE HAD FROM THE DRONE SURVEILLANCE OF DR. MILLER'S LOCATION. HE'S PRESUMED DEAD.







GIVE ME THE SATELLITE PHONE. BOB WILL SEND SOMEONE TO GET ME.

NO ONE IS COMING INTO THE QUARANTINE ZONE TO GET US. THE CLOSEST BORDER FROM HERE IS THE BEACH. WE HEAD THAT WAY.

MY APARTMENT IS ON THE WAY TOO, SO WE CAN SWING BY THERE.

WE CAN TRY TO FIND A WORKING VEHICLE AND GET OUT OF HERE.

I'M NOT RISKING MY LIFE FOR ANYONE ELSE.

THIS IS IMPORTANT. WHAT WE DO HERE WILL MATTER. WE CAN SALVAGE SOMETHING OUT OF THIS, AND TELL ONE HELL OF A STORY.

SCREW YOU!

SLAP

I'M NOT GOING ANYWHERE WITH YOU.

I'LL FIND SOMEONE ELSE TO HELP ME.

RRRRRRUNNABLE



5:10 PM

IT'S HARD TO TELL WHAT STREET THIS EVEN IS.

I THINK WE'RE ON THE CORNER OF NATIONAL AND VENICE. WE'RE TWO MILES FROM MY PLACE, ABOUT SEVEN TO THE BEACH.

I'VE KNOWN GUYS TO GO THIS FAR OUT ON A LIMB FOR LOVERS, BUT NEVER FOR A SISTER. IT'S SWEET, BUT A LITTLE CRAZY.

OUR RELATIONSHIP IS COMPLICATED.

MY DAD KILLED HIMSELF A FEW WEEKS AFTER ASHLEY WAS BORN. NO NOTE, AND SHE GREW UP BELIEVING IT WAS HER FAULT. WHEN OUR MOM DIED A COUPLE YEARS AGO FROM CANCER... IT WAS BAD. SHE TOOK IT REALLY HARD.

I MADE A PROMISE TO MY MOM RIGHT BEFORE SHE DIED THAT I WOULD TAKE CARE OF ASHLEY. IT'S BEEN HARD, BUT SHE'S THE ONLY FAMILY I HAVE LEFT.

MAYBE THIS BIKE WILL WORK. I CAN TRY AND HOTWIRE IT. I'VE PICKED UP A FEW UNSAVORY SKILLS IN MY TIME.

HALF TANK OF GAS, WE SHOULD BE GOOD TO GO.

THE FIRE HAS JUMPED THE FREEWAY NOW, AND THEY DON'T SEEM TO BE TRYING TO PUT IT OUT ANYMORE. THAT CAN'T BE A GOOD SIGN.

5:20 PM





DO YOU REALLY THINK THEY'LL BOMB L.A.?

YEAH, I DO. WOULDN'T BE THE FIRST TIME A CITY WAS SACRIFICED TO STOP A WILDFIRE...NOT NECESSARILY AN ACTUAL FIRE. WILDFIRE IS CODE FOR ANY OUT-OF-CONTROL VIRUS, PATHOGEN, OR CONTAGION.

IT REALLY MIGHT BE THEIR ONLY OPTION. ACR HAS MUTATED AT THIS POINT, PROBABLY SEVERAL TIMES.

I'M SURE THEY'VE TRIED A LOT OF THINGS BY NOW, BUT IF NONE OF THAT HAS WORKED TO SLOW IT DOWN THEY CAN'T RISK IT SPREADING OUT OF STATE OR COUNTRY.

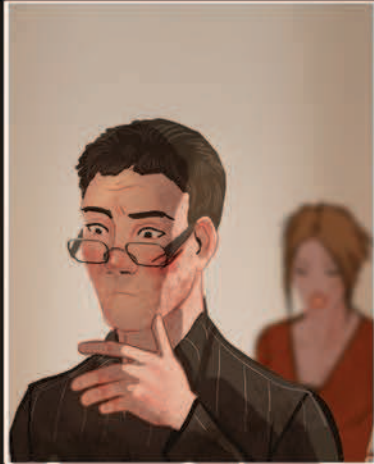


*Handy for
Sasha, Marcus, Peter,
Ashley and I are free.
- Sam, Field*



SLOW IT DOWN...

HARD TO BELIEVE A DANDELION CAUSED ALL THIS.



WAIT... THAT'S IT. THE A-16 TRIAL.



RIGHT HERE ON THE TABLE. THE ANSWER WAS STARING ME IN THE FACE THIS WHOLE TIME!

WHAT ARE YOU TALKING ABOUT?



WE DON'T NEED TO SLOW IT DOWN.



WE NEED TO SPEED IT UP.



WON'T THAT JUST MAKE IT WORSE?



NO...NO, LISTEN. IF WE CAN GET THE GROWTH TO ACCELERATE SO FAST THAT IT OUTPACES ITS ABILITY TO GERMINATE, IT WILL CHOKE ITSELF OUT.

JUST LIKE THIS FAILED EXPERIMENT. ACR HAS A BUILT IN TRAIT TO SLOW THE ACCELERATED GROWTH AT YIELD POINT. WE CAN SELECT THAT TRAIT AND OVERWRITE IT TO SPEED UP EVEN FURTHER.



IT JUST MIGHT WORK FOR THE SAME REASON SOME OF THE DEADLIEST VIRUSES DON'T SPREAD VERY FAR. THEY KILL THEIR HOST SO FAST IT'S UNABLE TO PASS ITS GENES ON.

I NEED TO TALK TO COLONEL DAVIS.

LET'S GO OUTSIDE SO I CAN GET A CLEAR SATELLITE CONNECTION. THE NETWORK WILL PATCH US THROUGH TO THE MILITARY.



THAT FIRE IS CLOSE; WE CAN'T STAY HERE LONG.

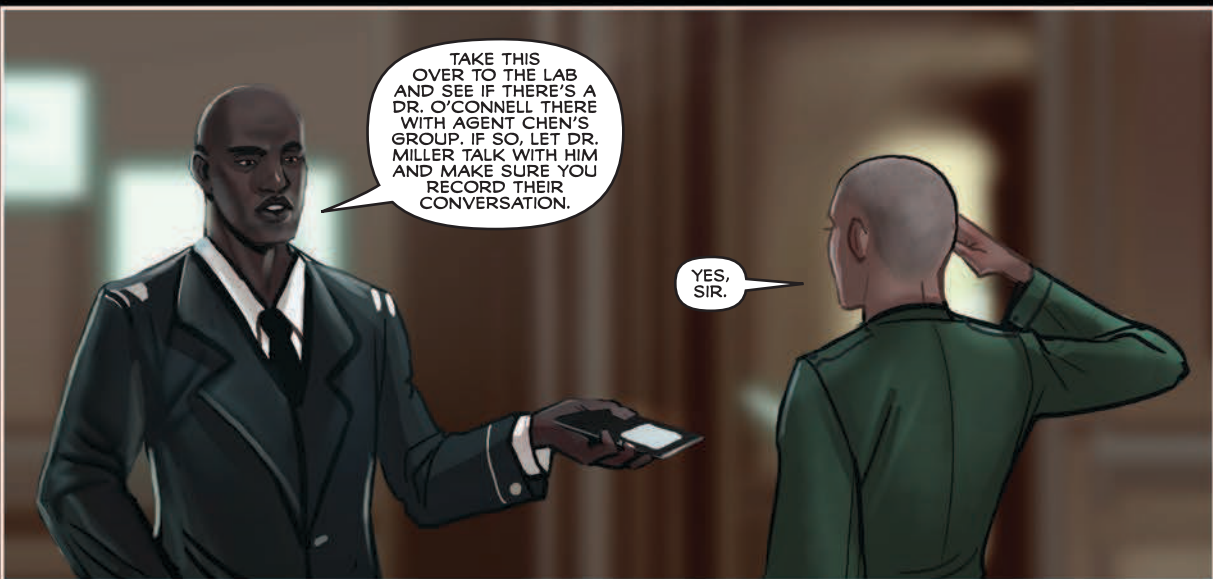


WOOSH

HI, THIS IS MICHELLE CRAWFORD. I'M WITH DR. DAN MILLER INSIDE THE QUARANTINE ZONE.

YES, HE'S ALIVE AND NEEDS TO SPEAK TO COLONEL DAVIS. HE HAS VITAL INFORMATION ON HOW TO STOP THE PLANTS FROM SPREADING FURTHER.

YES, I'LL HOLD.



5:45 PM

DAMN, MAN, YOU ALL RIGHT? THEY TOLD ME YOU WERE DEAD.

STILL MIGHT BE. DO YOU HAVE THE DATA ON THE A-16 TRIALS?

YEAH, I SHOULD. WE WERE JUST WORKING ON THOSE A FEW DAYS AGO.

THE ANSWER IS THERE. THE A-16 TRIALS WERE A FAILURE FOR US, BUT WE CAN USE THAT TRAIT, SPLICE IT IN WITH THE MUTATED ACR, AND SEED IT.

SINCE IT'S EVEN FASTER, IT SHOULD OVERTAKE THE WILDFIRE AND PUT IT OUT. I'D GUESS IT WOULD TAKE TWO, THREE DAYS AT MOST WITH GENERATIONAL SELECTION.

YES! THE MUTATED ROUNDS ALL SPED UP SLIGHTLY, SO IT NATURALLY SELECTS FOR THAT ANYWAY. I'LL GET ON IT.

WE'VE GOT SO MANY PEOPLE HERE WORKING ON THIS. YOU WOULDN'T BELIEVE THE RESOURCES THEY'RE THROWING AT THIS THING. THEY'VE TRIED A BUNCH OF DIFFERENT THINGS THUS FAR AND FAILED.

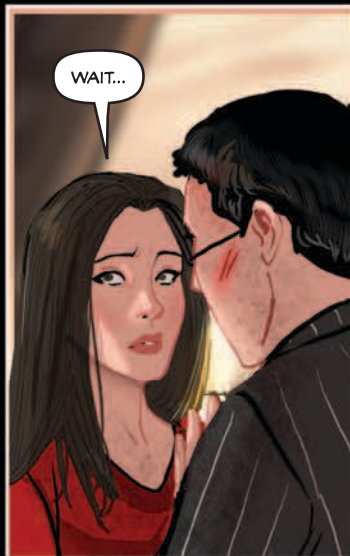
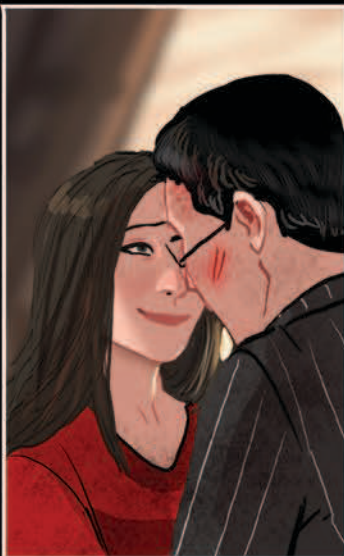
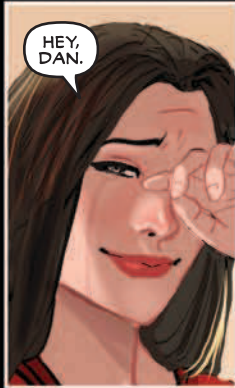
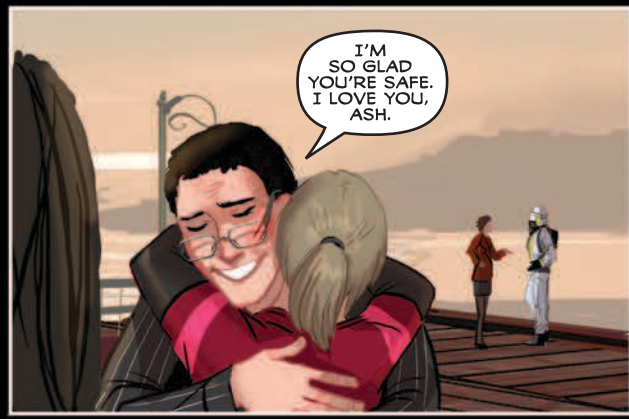
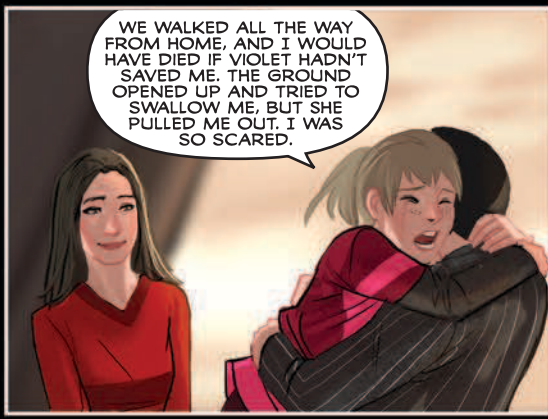
FAIRLY SURE...POSSIBLE... HOPE.

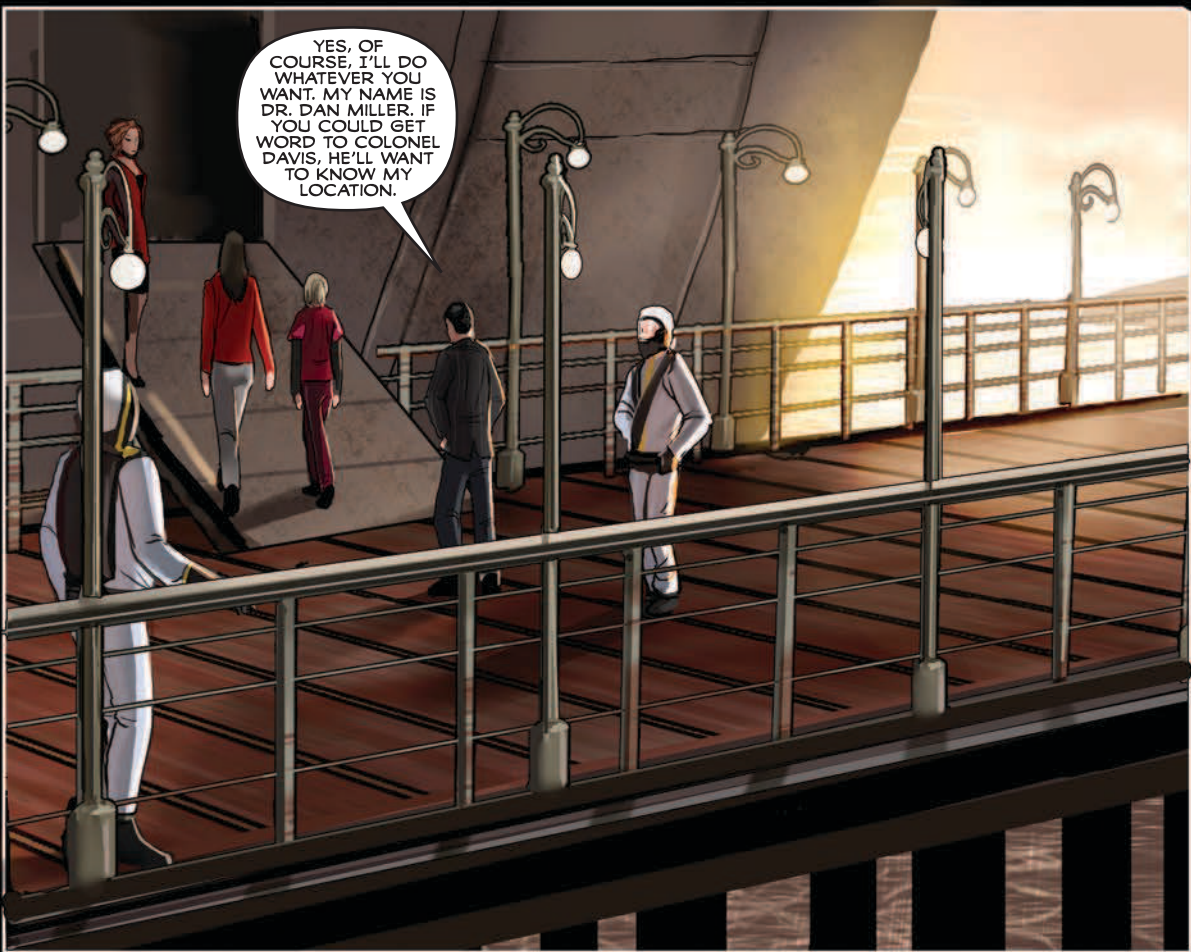
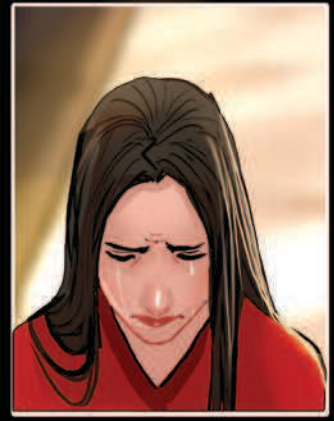
MICK? MICK? DAMN LOST THE CONNECTION.

LET'S GO.

SANTA MONICA PIER
6:00 PM



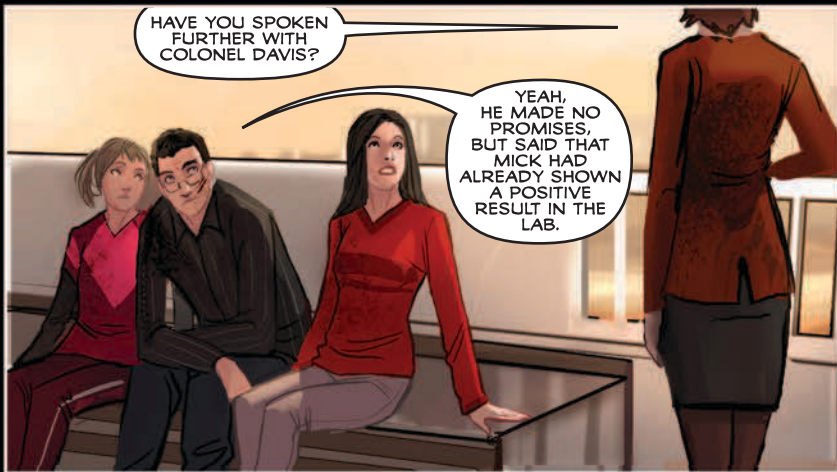




6:30 PM

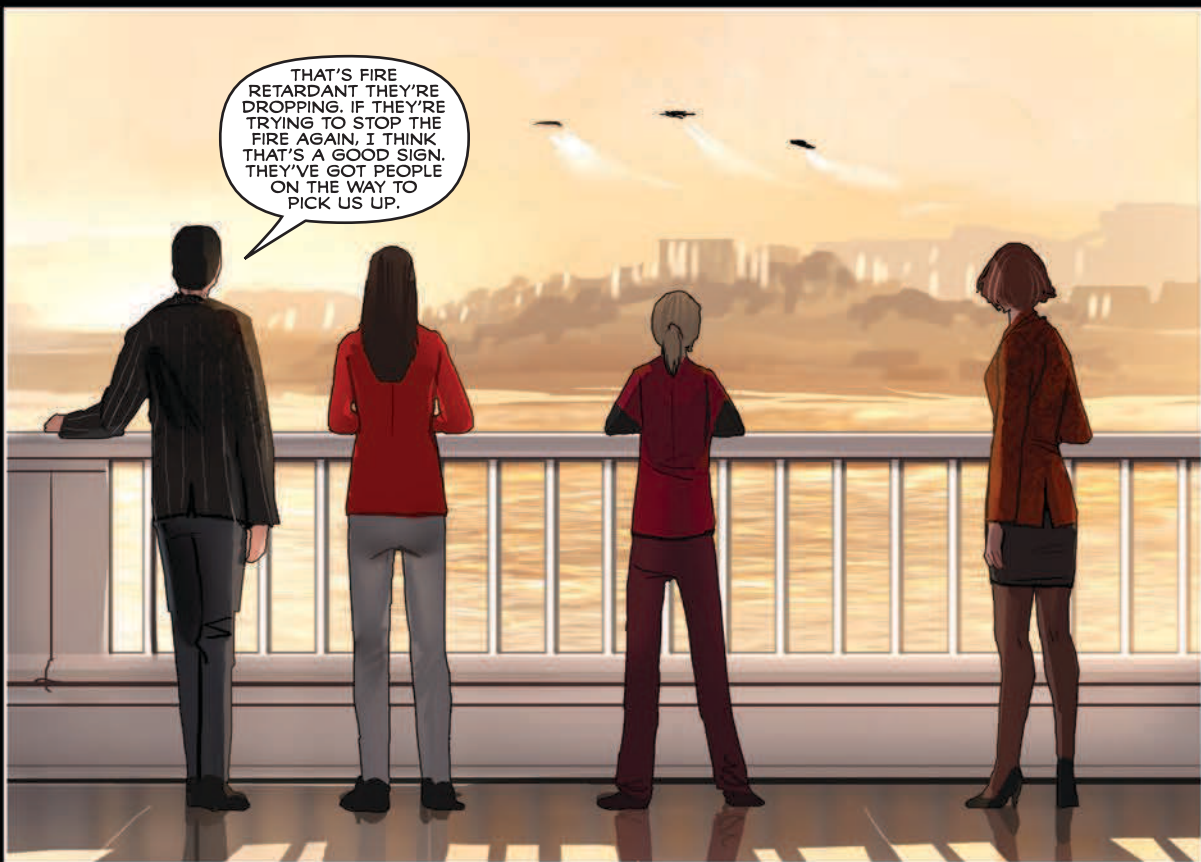


THOSE PLANES ARE FLYING LOW OVER THE CITY. I DON'T KNOW IF THAT'S A GOOD OR BAD THING.

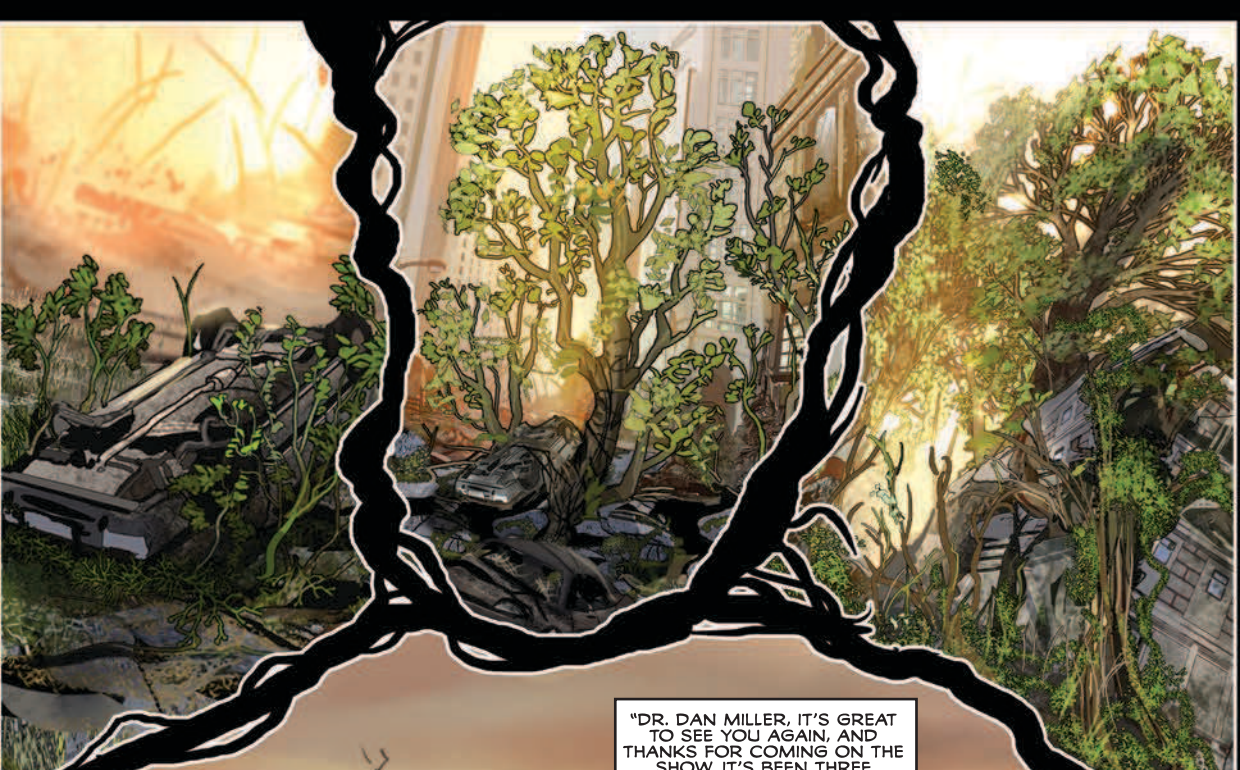


HAVE YOU SPOKEN FURTHER WITH COLONEL DAVIS?

YEAH, HE MADE NO PROMISES, BUT SAID THAT MICK HAD ALREADY SHOWN A POSITIVE RESULT IN THE LAB.



THAT'S FIRE RETARDANT THEY'RE DROPPING. IF THEY'RE TRYING TO STOP THE FIRE AGAIN, I THINK THAT'S A GOOD SIGN. THEY'VE GOT PEOPLE ON THE WAY TO PICK US UP.

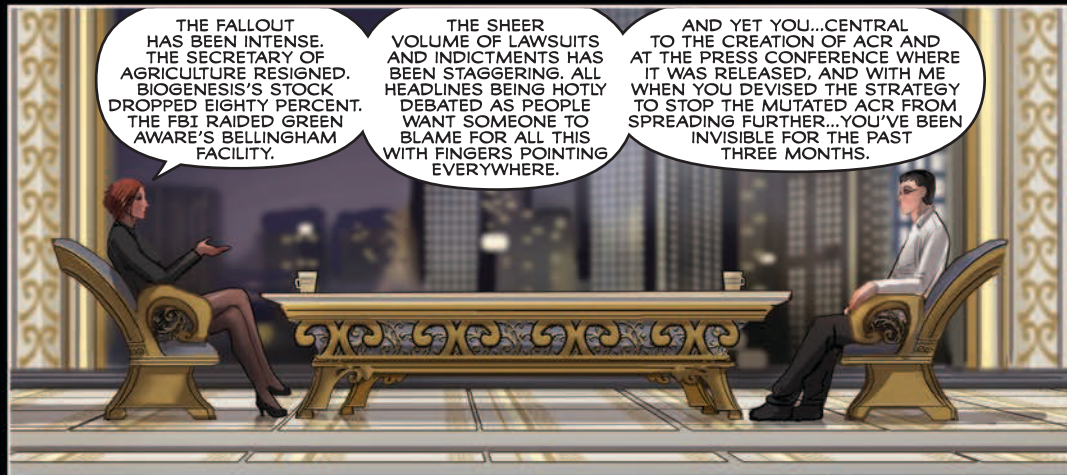


"DR. DAN MILLER, IT'S GREAT TO SEE YOU AGAIN, AND THANKS FOR COMING ON THE SHOW. IT'S BEEN THREE MONTHS NOW SINCE LOS ANGELES, AND A LOT OF UNANSWERED QUESTIONS STILL LINGER."



"OVER THREE HUNDRED THOUSAND PEOPLE CONFIRMED DEAD, FIFTY THOUSAND STILL MISSING AND PRESUMED DEAD, MILLIONS HOMELESS, AND TRILLIONS IN PROPERTY DAMAGE. ESTIMATES ARE IT WILL TAKE FIFTEEN YEARS TO REBUILD THE CITY."

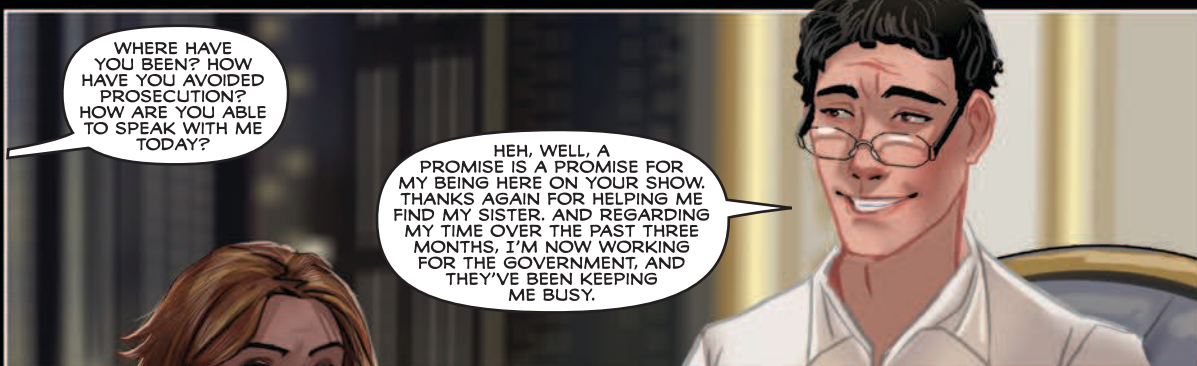




THE FALLOUT HAS BEEN INTENSE. THE SECRETARY OF AGRICULTURE RESIGNED. BIOGENESIS'S STOCK DROPPED EIGHTY PERCENT. THE FBI RAIDED GREEN AWARE'S BELLINGHAM FACILITY.

THE SHEER VOLUME OF LAWSUITS AND INDICTMENTS HAS BEEN STAGGERING. ALL HEADLINES BEING HOTLY DEBATED AS PEOPLE WANT SOMEONE TO BLAME FOR ALL THIS WITH FINGERS POINTING EVERYWHERE.

AND YET YOU...CENTRAL TO THE CREATION OF ACR AND AT THE PRESS CONFERENCE WHERE IT WAS RELEASED, AND WITH ME WHEN YOU DEvised THE STRATEGY TO STOP THE MUTATED ACR FROM SPREADING FURTHER...YOU'VE BEEN INVISIBLE FOR THE PAST THREE MONTHS.



WHERE HAVE YOU BEEN? HOW HAVE YOU AVOIDED PROSECUTION? HOW ARE YOU ABLE TO SPEAK WITH ME TODAY?

HEH, WELL, A PROMISE IS A PROMISE FOR MY BEING HERE ON YOUR SHOW. THANKS AGAIN FOR HELPING ME FIND MY SISTER. AND REGARDING MY TIME OVER THE PAST THREE MONTHS, I'M NOW WORKING FOR THE GOVERNMENT, AND THEY'VE BEEN KEEPING ME BUSY.



SO YOU SOLD YOUR SOUL TO STAY OUT OF JAIL?

HAH, NOTHING LIKE THAT. I'M WORKING WITH THE FDA TO MORE CLOSELY MONITOR THE EFFECTS OF GENETICALLY MODIFIED FOOD ON THE ENVIRONMENT, AND DESIGN TESTS TO CHALLENGE THE CLAIMS MADE BY COMPANIES DEVELOPING THEM.



THAT SOUNDS LIKE A GOOD THING.

LAKE TAHOE

"IT IS. WE NEED MORE STRINGENT TESTING TO ENSURE SAFETY FOR BOTH PEOPLE AND THE ENVIRONMENT."

"WE CAN'T TEST GMOS BY RELEASING THEM AND WAITING TO SEE WHAT WILL HAPPEN. IT'S BETTER TO WAIT DECADES THAN INTRODUCE SOMETHING THAT COULD POSSIBLY CAUSE DETRIMENTAL AND PERMANENT CHANGE."

"IMAGINE INTRODUCING A NEW PREDATOR ON AN ISLAND, FOREVER ALTERING THE FOOD CHAIN, AND POTENTIALLY KILLING OFF A SPECIES OR TWO."

READY?

ROWF
ROWF

"THE CONCERN IS THAT GMO RESEARCH MIGHT DO SOMETHING SIMILAR TO THE EARTH'S BIOSPHERE, WHICH IS A DELICATELY BALANCED SYSTEM."

FETCH!

GROWF

"WE DON'T WANT TO BE THE SPECIES THAT GOES EXTINCT."

GRRRRR

TO BE CONTINUED IN
WILDFIRE VOLUME 2: THE INSECTS
in Fall 2015



Science Class



SCIENCE CLASS

Welcome to the first volume of *Wildfire*! I appreciate you picking up this book, and I hope you like it. If you did and can spread the word like wildfire (heh), nothing calls attention to a book like a friendly recommendation or word of mouth. I'd greatly appreciate it. If you bought this hoping this was an anti-GMO propaganda piece, you're going to be a little disappointed. I do feel it's a balanced look at the possible dangers of GMO proliferation. I'm also not a mouth piece for any GMO company; I've never received any money from anyone in this field. I don't think they'll like this fictional story at all, by the way. It focuses on a real, potential risk of letting untested genetic variants into the environment which leads to a mass disaster. Do you consume GMO food? Yes, you probably do. Unless you **ONLY** eat food that says **CERTIFIED ORGANIC** on it or specifically says it doesn't contain GMO, then you probably are. Restaurants and fast food use a lot of it. The other real issue with trying to **NOT** eat GMO is that organic food is way more expensive.



GENETICALLY MODIFIED ORGANISMS (GMO)

I'm sure you've heard this term before but what does it mean?

What is genetic engineering?

Genetic engineering is the name for certain methods that scientists use to introduce new traits or characteristics to an organism. For example, plants may be genetically engineered to produce characteristics to enhance the growth or nutritional profile of food crops. While these technique are sometimes referred to as "genetic modification," FDA considers "genetic engineering" to be the more precise term. Food and food ingredients from genetically engineered plants were introduced into our food supply in the 1990s.

That definition is from the FDA's website which also has some interesting commentary on how they test these products and how they're "safe." Note also that it says 1990s. Truth is, you've been eating GMO food for decades and you probably didn't even know it. Is it possible that this has contributed to the obesity problem we're facing now? In my personal opinion, the answer to that is both yes and no. The biggest cause of obesity is sugar intake, and food manufacturers have systematically been adding sugar to **EVERYTHING** over the past few decades because we as consumers like it better. But I'm veering from the main topic. Here's the link for the FDA:

<http://www.fda.gov/food/foodscienceresearch/biotechnology/ucm346030.htm>

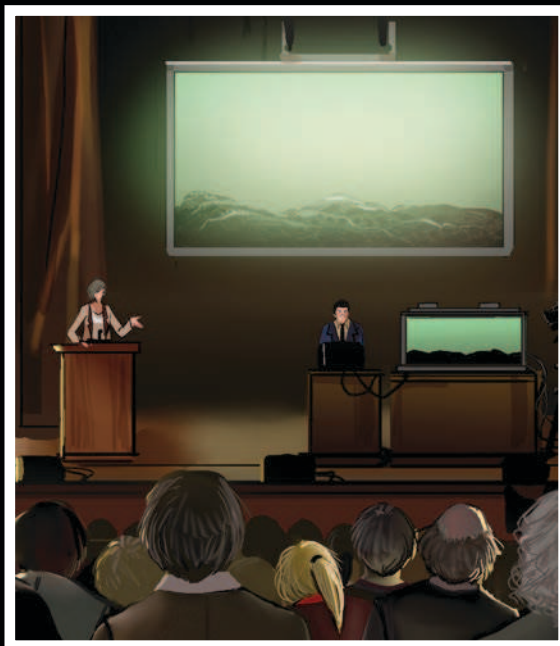
GMO includes animals as well. There are genetically altered fish, chickens, and cows, and, yes, you've probably eaten that already as well.

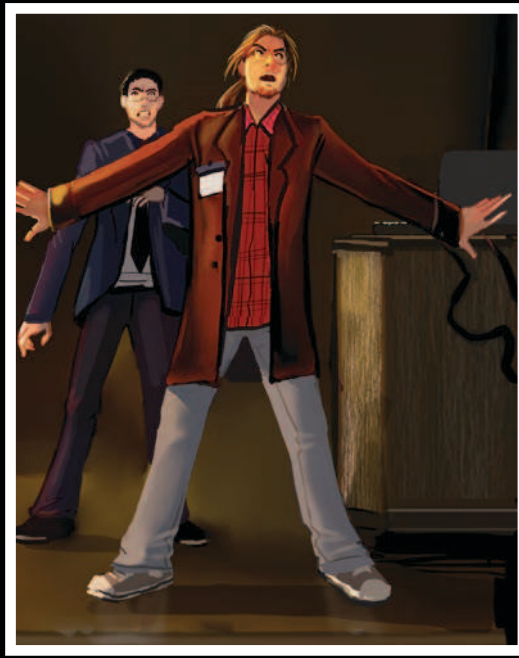
PRO ARGUMENT FOR GMO ●

The prevailing argument is to create more food to thwart growing populations and world hunger. There's a statistic I read that says about every two seconds worldwide a child dies from starvation. That's hard for us in the U.S. to fathom since we're all so fat and well fed for the most part, but take a trip to India (I did) and you'll see some starving people. There are starving people here in the U.S. as well. We just choose not to notice them. How would they increase food yield?

- 1) Insect resistant plants — farmers lose a lot of their crops to insects who eat them. Creating insect resistant GMO plants would either kill the insect if it ate it or make it unpalatable for them. Either way, they stop eating it and the farmer's yield goes way up without having to use more water, more land, and -- the biggest plus -- more pesticides to kill the insects.
- 2) Herbicide tolerant plants — the idea here is you make plants that are resistant to certain kinds of weed killer. That way you can spray your crops and only kill the weeds. This is one of the more "controversial" pro arguments.
- 3) Disease resistant plants — Same thing really, but we lose a LOT of crops to various plant diseases like blight, browning, etc. You design plants to resist these.
- 4) Cold tolerant — Design plants that can grow in colder climates and you vastly increase your farmable land.
- 5) Drought tolerant — Opposite of the previous point, but same concept that would open up areas of usable land and use less water.
- 6) Longer shelf life plants — This means designing plants to rot or "go bad" more slowly. This allows additional time for distribution and more time for it to be consumed.

These all sound great and are the utopian ideal of it all. The issue isn't just food growth as we currently grow more food than we need, but getting the food to areas that actually need it. In the U.S. alone, enough food is wasted to currently feed a large percentage of the parts of the world that need it. This comes down to that thing my mom used to say when I was staring at food I didn't want to eat. "There are starving kids in Africa, you should eat that." My response was always, "then send it to them." Ah the wisdom of children! Distribution is a huge problem. Most countries would prefer to grow their own food than have to import it and be susceptible to the whims of the world market economy. Many of the "ideals" of GMO would allow countries to grow more of their food.





CON ARGUMENT FOR GMO ●

The primary argument against GMO is that we're releasing unregulated, un-thoroughly-tested variants into the environment without knowing what the long term effects might be. There's a great concern over the environmental effects and how it might affect us that consume it as well. All good things to discuss! Let's look at some of the arguments:

- 1) Direct effects on humans who consume – This includes possible tissue/organ damage, compromised immune system, increased fat and enhanced allergic reactions. These are legion and the most immediately concerning. The biggest issue with this is the unknown. The “allergens” thing is interesting. I don't recall many kids with peanut allergies back in the 70's, but there seem to be a lot of them now.
- 2) Cross pollination – This is a real problem, as non-GMO-plants have seeds, and these GMO seeds tend to float on the wind to far distances. We've found GMO breeds of corn in Mexico, thousands of miles from where they were initially planted. Organic farmers and some countries do not want GMO strains, and having the seeds float into their crops is troublesome to say the least.
- 3) Insect resistance – Any time you up your game, nature ups it as well. If we create plants that are resistant to certain insects, those insects will also naturally select over time to override said resistance.
- 4) Weed resistance – Same as the previous point here, but for plants. The logic here is the same as why our overuse of antibiotics is a huge issue as well. It becomes a cycle where you constantly have to evolve these things for this to keep working.
- 5) Long term environmental effects – This is sort of broad sweeping and covers a lot of detail, but the main concern (and valid) is we really don't know what these things will do over the long haul.
- 6) Lack of real testing – This is another issue that is hotly debated, but I tend to fall on the activist side of things here. These things need better testing and government oversight. European governments are WAY more concerned about this than we seem to be here in the U.S.

<http://healthresearchfunding.org/pros-cons-genetically-modified-foods/>

<http://www.csa.com/discoveryguides/gmfood/overview.php>

<http://www.newportnaturalhealth.com/2013/07/gmos-the-pros-cons-of-genetically-modified-food/>

IS GMO A NEW THING?

Not really. We've not been doing it previously the way we're doing it now, but farmers have been cross-pollinating breeds and doing genetic enhancement on their own by taking seeds from the stronger plants and replanting those for millennia.

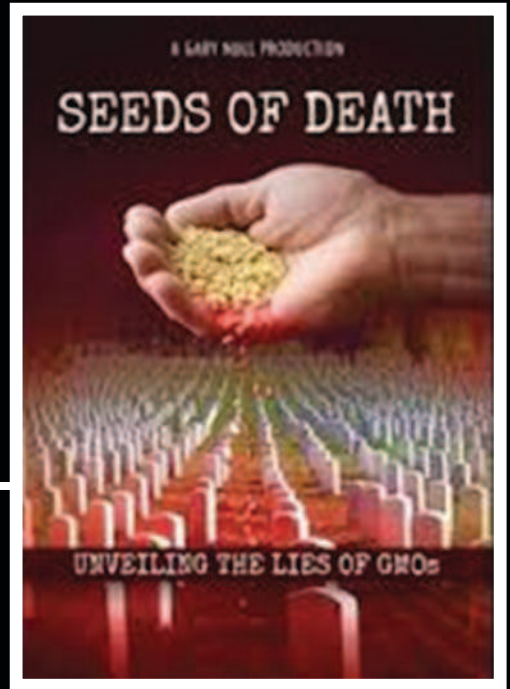
WHAT KINDS OF FOODS ARE GMO?

The big 10 are corn, soy, cottonseed, papaya, rice, canola, potatoes, tomatoes, dairy (milk, cheese, yogurt) and peas.

SEEDS OF DEATH

This is a free documentary film, very anti-GMO, but informative and entertaining to watch (so much of this shit is so dry).

<https://www.youtube.com/watch?v=eUd9rRSLY4A>



COMPANIES THAT USE GMO INGREDIENTS

This is not a complete list, but I was looking at pages and pages of listings, and just wrote down the ones whose products I know I've used recently:

Blue Sky, Coca Cola, Hansen, Kraft, Nestle, Procter and Gamble, Libby's, Ocean Spray, Kellogg, Nature Valley, Nabisco, Hershey, Lifesaver, Quaker, Pepperidge Farm, Campbells, Frito Lay, Hostess, Heinz, Crisco, Kashi, Peter Pan, Smuckers, Skippy, Hormel, Progresso, Eggo, Boca, Marie Callender, Morningstar Farms, Stouffers, Betty Crocker, Pillsbury, Aunt Jemima, Duncan Hines, Beech-Nut, Enfamil, Good Start, Similac, Isomil, Yoplait, Land O Lakes, Keebler and Dannon.

If you have thoughts on GMO or this story and want to share them with me, you can hit me up on Facebook or Twitter. I have barely scratched the surface of this and the issues revolving around it. Fortunately, there's more Science Class to discuss this. =)

NOTE – I have started a very self-serving web site called matttalks.com (three t's in the middle there), and am both blogging and posting all Science Classes there with **HARD LINKS!** You can just go there and click without having to copy the URL.

<http://matttalks.com/>

Let me start by acknowledging that I am not a plant expert. Not even close. I have no special degrees or education in this field. I was interested and did a lot of research because I was curious. I discovered a lot of fascinating things while doing that, and then made this story up. As promised, I wanted to delve into how they make GMOs and their history a bit.

GMOs ARE NOT NEW

“Scientists and farmers have been genetically modifying food crops since the late 1800’s through a process known as hybridization or selective plant breeding. This was the pre-biotechnology method of introducing genetic materials from one individual plant to another.”

<https://ag.arizona.edu/yavapai/anr/hort/byg/archive/geneticallymodifiedcrops1.html>

There is a mistaken assumption that the creation of GMO foods is a modern thing and only possible through genetic engineering. While the past 20 years have really had the most advancement in this field we’ve ever seen, farmers have basically been doing the same thing for a really long time.



MONSANTO

The leading biotech company was founded in 1901 with the introduction of Sweet and Low.

Here is Monsanto’s own history page where you can learn more about them:

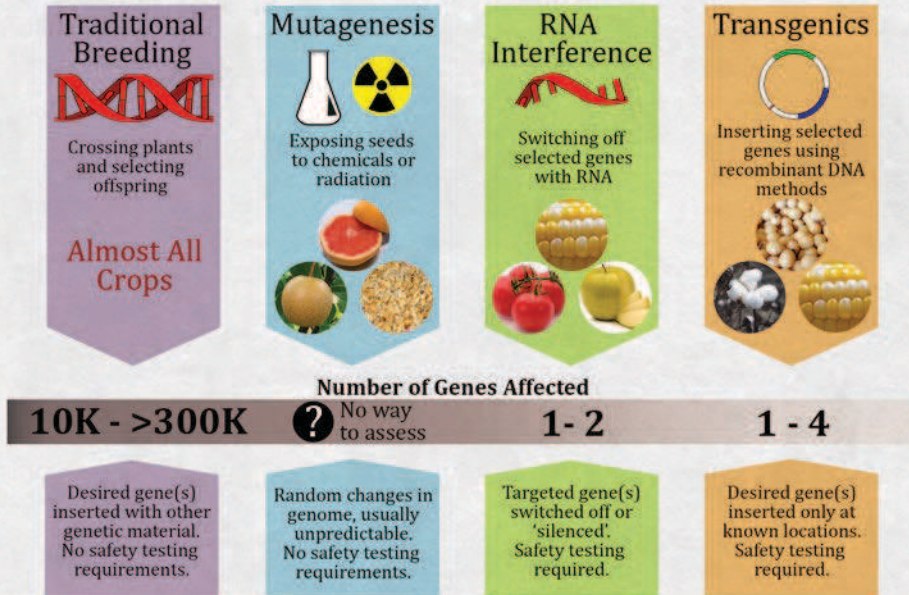
<http://www.monsanto.com/whoweare/pages/monsanto-history.aspx>

And here’s one that doesn’t like Monsanto much:

http://www.naturalnews.com/037289_monsanto_corporations_ethics.html#

People tend to vilify Monsanto, but there are a lot of scientists that DO work for Monsanto that really want to make the world a better place. There’s enough hate for the company online; it’s easy to find.

How Crops Are Genetically Modified



Sources: Biotechnology Provides New Tools for Plant Breeding, University of California Davis Publication 8043; Plant Breeding: Induced Mutations Technology for Crop Improvement, F.J. Novak, R. Brunner, International Atomic Energy Agency, 1992; Atomic Gardens: Public Perceptions and Public Policy, B. Dick, M. Jones, Life Sciences Foundation Magazine; RNAi for Crop Improvement, International Service for the Acquisition of Agri-Biotech Applications Pocket K No. 34; Infographic by XiaoZhi Lin

MODERN BEGINNING OF GMOs

The modern use of GMOs and transgenic plants started in the 1980s when scientists discovered they could transfer pieces of DNA between organisms. The first transgenic plant was a tobacco plant in 1983, engineered to be resistant to antibiotics, and cotton followed in 1990. The real boom of GMOs started when Monsanto introduced herbicide-immune soy beans known as "round-up ready". They would sell the seeds and the herbicide to the same farmers as part of a package. Shortly after this it was discovered that vitamins and nutrients could be added to plants.

"Why do scientists say that genetic engineering of crops is just the latest chapter in 10,000 years of high-tech agriculture? Or that genetic engineering is just a more precise way to breed plants compared to conventional breeding? Plants swap genes even without the help of human beings when they reproduce sexually, and our ancestors guided the process to develop crops suitable for agriculture. This GLP infographic presents four main ways in which crops have been genetically modified by humans: traditional breeding, mutagenesis, RNA interference and transgenics."

<http://www.geneticliteracyproject.org/2014/04/22/glp-infographic-how-crops-are-modified-are-gmos-more-dangerous/#.U6B7F41dWrw>

SCIENCE OF HOW GMOs WORK ●

Here is a good non-technical explanation:

"A gene consists at an average of about 3000 "code syllables". So it is a fairly large piece of information that is to be transferred.

1. The desired gene is taken out of the DNA of the donor cell. Special techniques are used, that are of no importance here.

2. A gene is much too small to be inserted with some kind of microsurgery. Therefore some carrier ("vector") is required which takes the gene into the recipient cell and somehow gets it inserted into the DNA of the recipient."

Keep reading here:

<http://www.psrast.org/whisge.htm>

And here is a crazy technical description:

<http://www.nature.com/scitable/topicpage/genetically-modified-organisms-gmos-transgenic-crops-and-732>

<http://www.mrothery.co.uk/genetech/genetechnotes.htm>



BT CORN

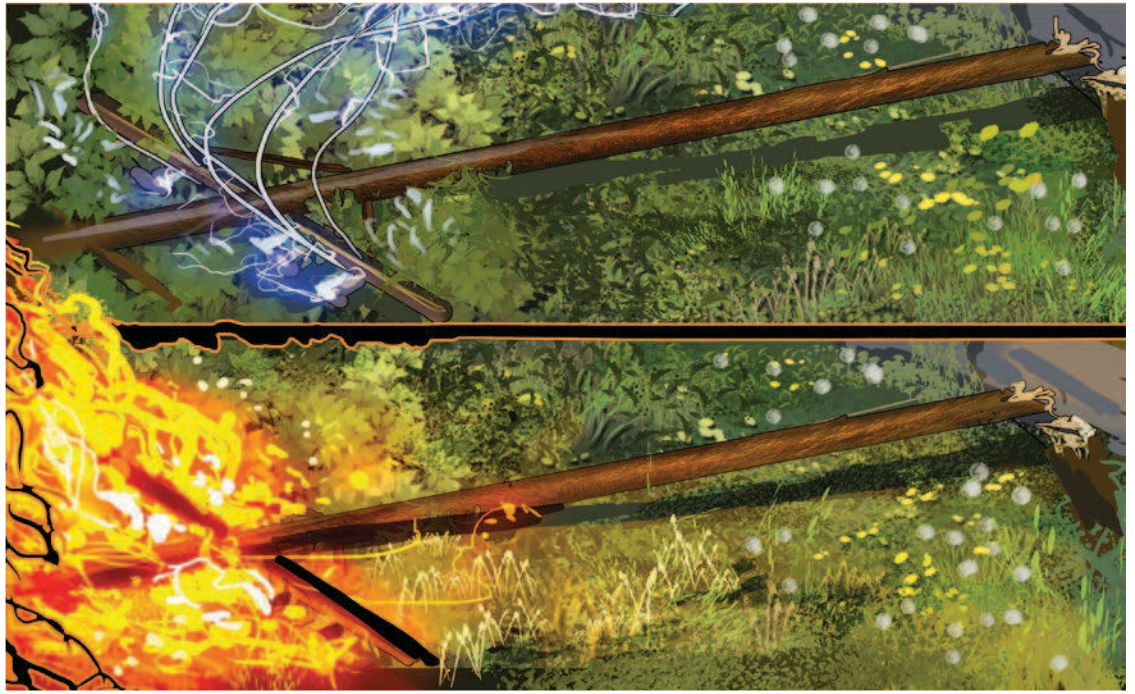
BT corn was one of the first big crops. The idea was to develop a gene that was resistant to caterpillars. You can read about it in depth here:

<http://www2.ca.uky.edu/entomology/entfacts/ef130.asp>

FLAVR SAVR TOMATOES

An interesting tale of an early flop in GMOs was this tomato. It's an amazing story about people trying to enter a business they know nothing about. Billions of dollars flushed down the drain. They wanted to make a bigger, juicer tomato that would have a longer shelf life, but it was too costly and didn't work as advertised.

<http://www.public.iastate.edu/~rhetoric/105H16/cofp/tmrcofp.html>



HOW COMPANIES ARE NOW GETTING AROUND REGULATION

Companies have adopted a new strategy in the GMO game. They are taking mass amounts of bio-mulch of a certain type of plant and searching for DNA that has specific traits in it. They're then isolating and using that DNA to clone and replicate it in plants. This means it's NOT GMO, because they're using a naturally occurring gene. Interesting here would be an aberrant gene discovered and used for whatever reasons. Ooooo, my nefarious mind wonders!

NATURAL DISASTERS ●

This is about a GMO released into the environment causing a disaster, but the information about naturally occurring ones and how the government reacts to them is relevant. I spent a lot of time researching how the government says they react to them and how they actually do. It's interesting stuff.

The reality is that governments don't react all that well or quickly to natural disasters. Part of this is unavoidable, as we often don't know when natural disasters will strike or how bad they'll be...but look at the pathetic response to Katrina and one has to wonder what they were doing.

<http://www.sciencekids.co.nz/pictures/disasters.html>



READY.GOV

This is actually a very useful site and lists out natural disasters, what you should do during them, etc. It's worth spending about an hour or so to read through it. Living in California we have earthquake kits and planned meeting places, etc. Every area seems to have its own prevalent natural disaster. Being prepared and having some sort of personal evacuation plan is key. Keep in mind; it may be days or weeks until someone else can help you, so learn to help yourself.

<http://www.ready.gov/natural-disasters>

The Federal Emergency Management Agency has a mission statement that reads:

"FEMA's mission is to support our citizens and first responders to ensure that as a nation we work together to build, sustain, and improve our capability to prepare for, protect against, respond to, recover from, and mitigate all hazards."

They have broad-sweeping powers and can overrule civil liberties to achieve their goals, especially once a federal emergency zone has been declared. There are lots of conspiracy theories about FEMA. Some of them are fun, but most are BS.

2014 Budget: \$9,590,000,000

<http://www.fema.gov/>



CONSPIRACIES

Concentration camps for the homeless and less desirables (which if you just drive around LA, you realize this isn't happening).

<http://www.prisonplanet.com/fema-camps-city-to-exile-the-homeless-its-not-a-conspiracy-theory-anymore.html>

<http://conspiracy-watch.org/breaking-news-fema-camps-2014/>

FDA

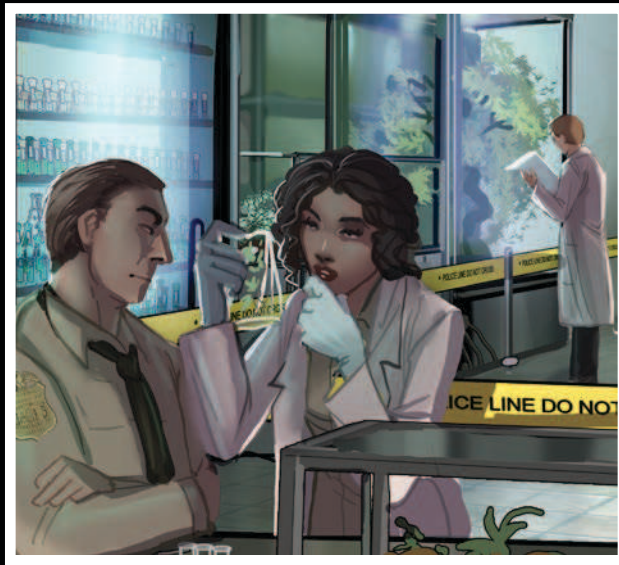
The U.S. Food and Drug Agency mission is:

"... responsible for protecting the public health by ensuring the safety, effectiveness, and security of human and veterinary drugs, biological products and medical devices; ensuring the safety of foods, cosmetics, and radiation-emitting products; and regulating tobacco products.

FDA is also responsible for advancing the public health by helping to speed innovations that make medicines more effective, safer, and more affordable and by helping the public get the accurate, science-based information they need to use medicines and foods to maintain and improve their health. FDA also has responsibility for regulating the manufacturing, marketing and distribution of tobacco products to protect the public health and to reduce tobacco use by minors."

2014 budget \$4,653,657,000

<http://www.fda.gov/downloads/AboutFDA/ReportsManualsForms/Reports/BudgetReports/UCM349710.pdf>



CDC

Centers for Disease Control and Prevention are, of the three listed, my personal favorite. I know people that work for them, and despite the recent news about some viruses being not contained properly, they seem to really have their shit together.

The CDC mission statement:

“CDC works 24/7 to protect America from health, safety and security threats, both foreign and in the U.S. Whether diseases start at home or abroad, are chronic or acute, curable or preventable, human error or deliberate attack, CDC fights disease and supports communities and citizens to do the same.

CDC increases the health security of our nation. As the nation’s health protection agency, CDC saves lives and protects people from health threats. To accomplish our mission, CDC conducts critical science and provides health information that protects our nation against expensive and dangerous health threats, and responds when these arise.”

2014 Budget: \$6,600,000,000

<http://www.cdc.gov/>

INTER AGENCY TASK FORCES

I had some difficulty finding out who would be in charge for a GMO-related disaster, I actually emailed a few contacts and was given different answers. FDA, CDC or FEMA... hmmm pick one. The best answer I could come up with was FEMA although the FDA claims to have jurisdiction over anything GMO-related. I could very well be wrong in how I depicted how this would work, but it was the best I had to work with based on the information that was available. Most of my scientist friends all seemed to agree that FEMA would take point so I went with the brain trust. It is interesting how certain things overlap. I’ve always been amazed too at how our government can be so good at certain things and so inept at others.

FIRE AS CATALYST FOR MUTATION

In the story I needed a reason for the GMO disaster to escalate and the only real way to do that was to have larger plants involved. Took me awhile to figure this one out, but in researching the fire itself and its effect it seemed to work. Wildfires are very important for plant growth and we've actually made them more intense by not allowing them to occur as regularly. It builds up and when it finally happens (as its natural cycle) they are more severe as a result of said buildup.

Some fires are beneficial, some are damaging - it all depends on the intensity.

"A healthy wildfire typically moves through the understory of a forest and burns the dead or dying plant material. This helps plant growth by destroying useless plant material and leaving healthy plant material intact. Pathogens on or around the plant are destroyed by the heat. Buildup of dead twigs and leaves is destroyed allowing new space for plants to grow. Following the fire, the increase in sunlight provided by removing the plant excess plant material helps the plants recover. Ash is absorbed into the soil, providing nutrients vital to plant growth. During a typical fire season (from July to October in California) when nitrogen is limited in the soil, the addition of organic plant matter to the soil can provide a source of nitrogen to boost plant growth."

<http://www.ercsjsu.org/blog/category/native%20plant%20species>



SINK HOLES

These and how they occur fascinate me. Scary as hell too! Can you imagine just sitting in your car or even in your house and one of these sucks you under and then fills in over you? You die and you may not even know how it happened. They happen mainly because of shifting earth and water movement underground, and sometimes because of collapsing underground caverns. All of these would be influenced by massive root systems growing under a city, so lots of those in LA during the fun.

<http://science.howstuffworks.com/nature/natural-disasters/sinkhole.htm>

SCHOLARLY ARTICLES ON GMO RISKS

I found this site biointegrity.org and lost about six hours skimming through and reading all of these. Some insane stuff here but fascinating to read. What I glean from it is basically no one knows what the long term effects of GMO are. There's also a nice differentiation in there from normal plant hybridization and the GMO processes.

<http://www.biointegrity.org/FDAdocs/01/01.pdf>
<http://www.biointegrity.org/FDAdocs/03/03.pdf>
<http://www.biointegrity.org/FDAdocs/10/10.pdf>

Thanks for picking up the finale of *Wildfire* Volume 1! Linda and I greatly appreciate you reading our work; it's been a pleasure doing this one. We are working on a sequel for next year.

"Hard to believe a dandelion caused all this."

I love this line and tossed it in there. Is the story that was laid out in *Wildfire* possible? I think so, yes, but maybe not to this dramatic extent. Could something get seeded into the biosphere that changes things for the worse permanently? You better believe it. I love the movie *Contagion*. If you've watched it, (SPOILER ALERT) you'll recall that the virus was caused by a bat pooping into a pig's lot. The pig was slaughtered and fed to Gwyneth Paltrow's character.

INVASIVE SPECIES

I talk about this on the last page as a "cautionary" tale. This has happened MANY times. Essentially someone brings, either knowingly or by accident, a bug, fish, or animal of some kind into a new environment where it didn't live before. This has massive effects on the local food chain, and can devastate entire species. This isn't speculation, it has happened many, many times. The first link has a long list of instances where this has happened.

<http://www.invasivespeciesinfo.gov/animals/main.shtml>

<http://eol.org/info/460>



JOURNALISM

I loathe modern news, so forgive me for putting that perspective in there. I gave it to Michelle Crawford, someone actually in the field. I think Michelle is actually my favorite character of the series. "Modern media defies ethics and justifies lies. And why? Because people don't want the real truth, they want sensationalism." The gossip and celebrity bait that people seem to want has zero interest to me. Most news organizations have also gutted their investigative reporting divisions today. There are very few true, free investigative reporters out there anymore. Why does this matter? Without Woodward and Bernstein (mentioned in the script) Watergate would NEVER have mattered, and Richard Nixon would not have resigned as President. If you've never seen *All the President's Men* with Robert Redford and Dustin Hoffman, you're missing out – it's a great flick.

Quote from Mark Zuckerberg (Facebook's founder), "A squirrel dying in front of your house may be more relevant to your interests right now than people dying in Africa."

This is a fascinating read, check this one out:

http://www.huffingtonpost.com/2014/05/22/facebook-media-rant_n_5374264.html

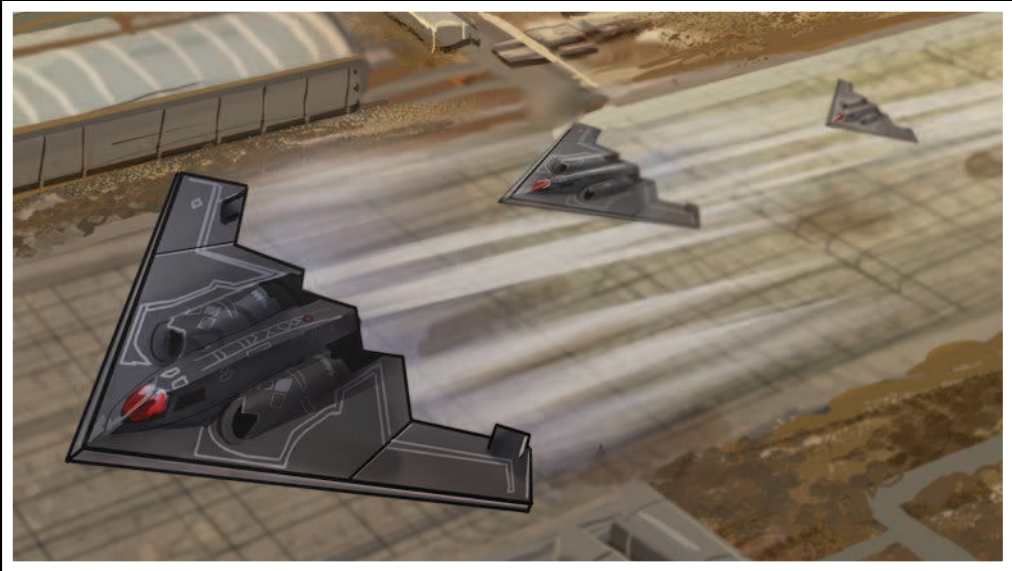
NO NARRATIVE

You've probably noticed that there is ZERO narrative in this book, and it was hard for me to do this way. One of the things I love about comic books is the internal narrative you can add to push the story along, info dump, or give an insight into what the character is thinking (I hate thought balloons). One reason I did this is that I really like this story, and am planning to spec it as a screenplay (my first official) for a film. No narrative in movies for the most part.



SHEILA'S DEATH

There are a lot of smart people that react poorly in extreme circumstances. I knew I was building this character to be unlikable and kill her off, but I've always been annoyed in movies when characters do stupid things. It's a trope of every horror film. There are studies showing that this is actually realistic for some people though, and since this woman was intended as cannon fodder, so be it!



TICKING CLOCK ENDING

I actually changed the ending. Originally I was planning on having an ending like *The Rock*, where they were flying in to bomb the city, but at the last minute Dan and his people are able to seed the newly mutated ACR to speed it up even further, so there's this tense few moments where we don't know how it'll end. This may have made a better dramatic ending, but it simply did not make sense logically with how the science would work. So forgive me...I went the way I did. There's already some implausible shit going on, I didn't want to push it too far.

SPEED UP THE PROCESS ●

Would this work? I took that kernel of an idea from a meeting I had with a Botany professor at UCR (Riverside, CA) who was complaining about fast growing species killing off entire areas of fauna. I wrote that down, along with a ton of other things from several meetings. I also sent the original outline to a couple specialists in this field, and they told me it was definitely unlikely, but possible. Hey, creative license! I'll take slimly possible. =)

Lastly, I want to say that this research and this story has CHANGED my opinion on GMOs. I was initially very pro-GMO, thinking people are being silly and crazy left-wing about it. I am not now anti-GMO, but I'm certainly slightly left of center. I'm for science and this research, but man...we need to test this stuff...and for decades. There are LONG term effects of things that we don't fully understand or grasp until they get out there. My lady smokes those e-cig things, and I see the people talking about how they "don't know" the effects of those over the long term. Things like that scare me, especially when it hits close to home.

Are GMOs partially culpable for heightened allergies, increases in cancer, and autoimmune afflictions? Are they contributing to the obesity epidemic? I really don't know, but I'll be safe over sorry, and maybe you should too. You can't avoid GMOs. It's just not realistic in the U.S. unless you're rich or live on an organic farm. But you can limit how much you eat of the overly processed, crazy sugar-enriched items that no one needs. Here are some more links for those of you that want to read up on the debate.

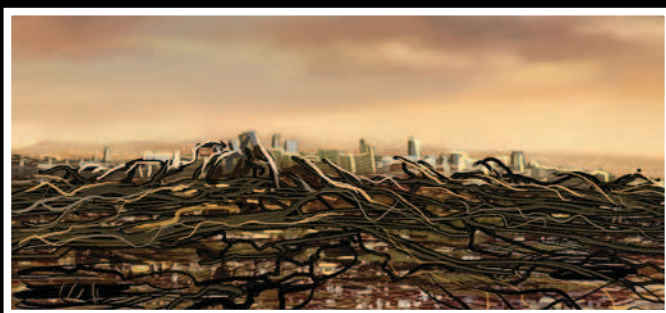
<http://www.geneticliteracyproject.org/2014/07/01/anti-gmo-sentiments-lean-to-obsessive-in-arizona/>

<http://www.forbes.com/sites/jonentine/2013/10/14/2000-reasons-why-gmos-are-safe-to-eat-and-environmentally-sustainable/>

<http://thebirdman.org/Index/Others/Others-Doc-Environment&Ecology/+Doc-Environment&Ecology-FoodMatters/StimulatingPlantGrowthWithElectricity&Magnetism&Sound.htm>

<http://www.greenfacts.org/en/gmo/3-genetically-engineered-food/5-gene-flow.htm>

http://www.ted.com/conversations/2694/genetic_manipulation_by_humani.html



That's it! Thanks for reading *Wildfire*! I hope you enjoyed it. We ARE doing a sequel and Linda will be returning to do the art with me. Very exciting stuff, look for it Fall 2015.

Carpe Diem!

Matt Hawkins
@topcowmatt

<https://www.facebook.com/Selfloathingnarcissist>

Cover Gallery



Wildfire #1 Cover A
by: Linda Sejic



Wildfire #1 Cover B
by: Stjepan Sejic



Wildfire #1 Retailer Incentive
by: Linda Sejic



Wildfire #1 Phoenix Comic Con Variant
by: Linda Sejic



Wildfire #2 Cover A
by: Linda Sejic



Wildfire #2 Cover B
by: Stjepan Sejic



Wildfire #3 Cover A
by: Linda Sejic



Wildfire #3 Cover B
by: Stjepan Sejic



Wildfire #4 Cover A
by: Linda Sejic



Wildfire #4 Cover B
by: Stjepan Sejic

