

World of VIRUSES

THE
CURSE
OF THE
TREE-MAN



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World of VIRUSES



Graphic Novel

THE CURSE OF THE TREE-MAN

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Essay

THE PARADOXICAL VIRUS: HUMAN PAPILLOMAVIRUS (HPV)

written by **CARL ZIMMER**

Thanks to

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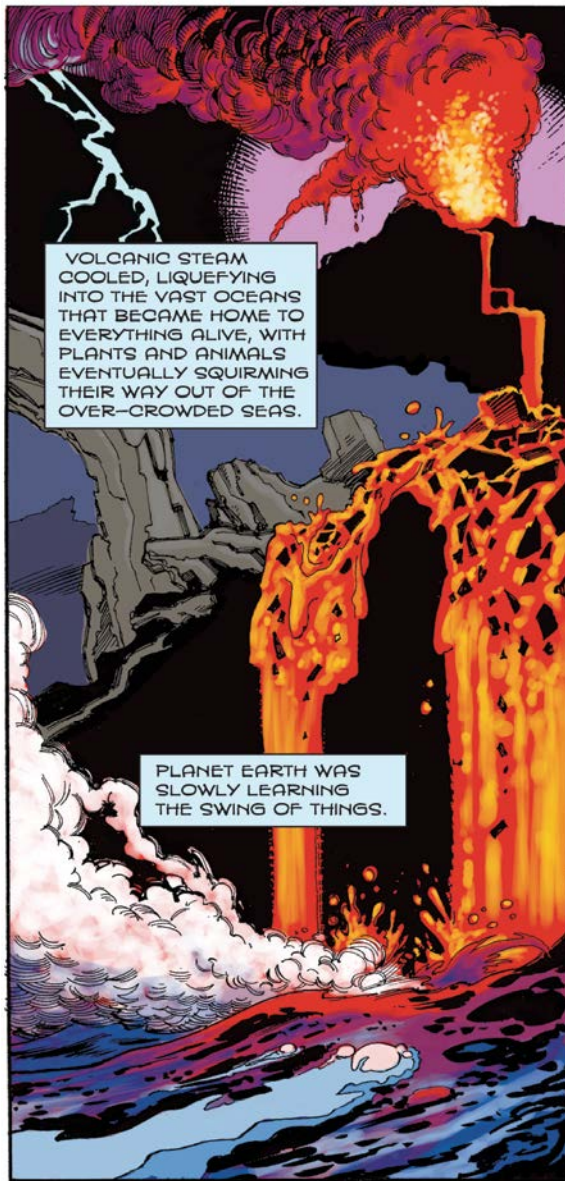
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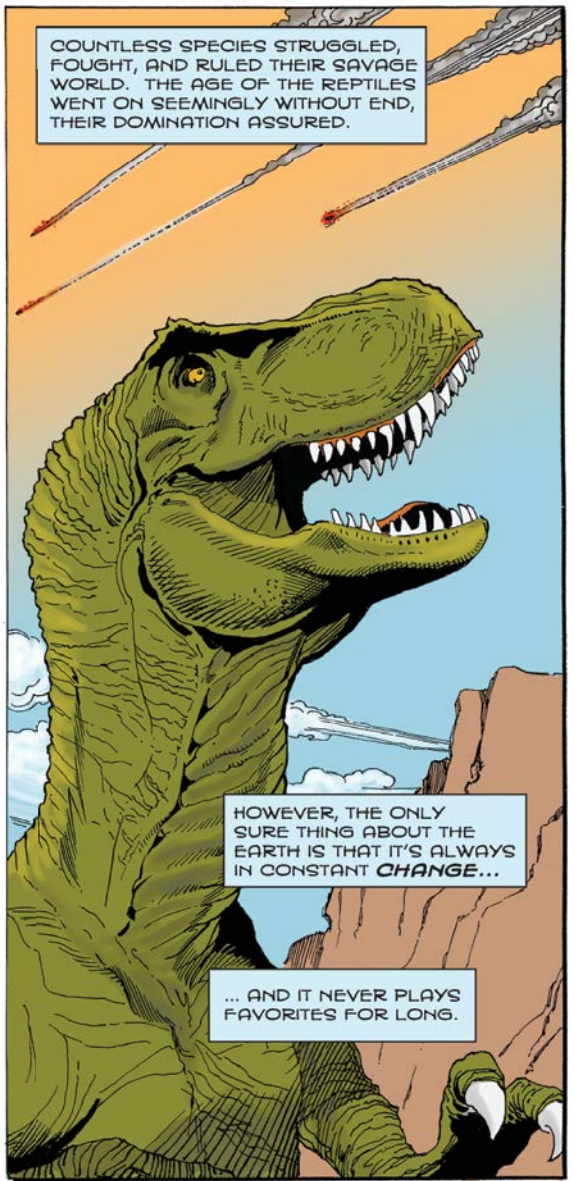
THERE ARE A THOUSAND DIFFERENT ARGUMENTS FOR EXACTLY HOW IT HAPPENED, BUT ONE THING'S FOR CERTAIN—A VERY LONG TIME AGO ALL OF THIS **STARTED**.

LIFE CAME QUICKLY, IN THE FORM OF **SINGLE-CELL** ORGANISMS, A FEW BILLION YEARS AGO, GIVE OR TAKE TEN MILLION HERE OR THERE.



VOLCANIC STEAM COOLED, LIQUEFYING INTO THE VAST OCEANS THAT BECAME HOME TO EVERYTHING ALIVE, WITH PLANTS AND ANIMALS EVENTUALLY SQUIRMING THEIR WAY OUT OF THE OVER-CROWDED SEAS.

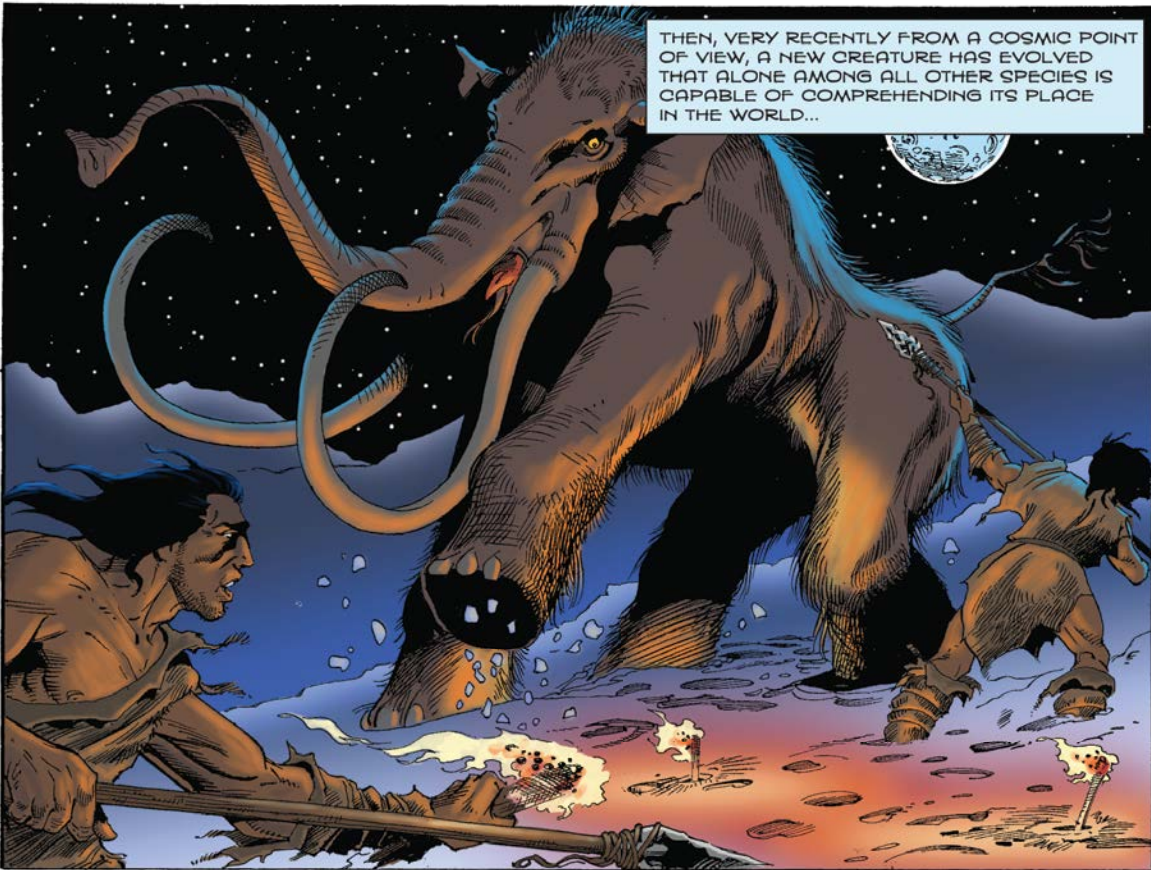
PLANET EARTH WAS SLOWLY LEARNING THE SWING OF THINGS.



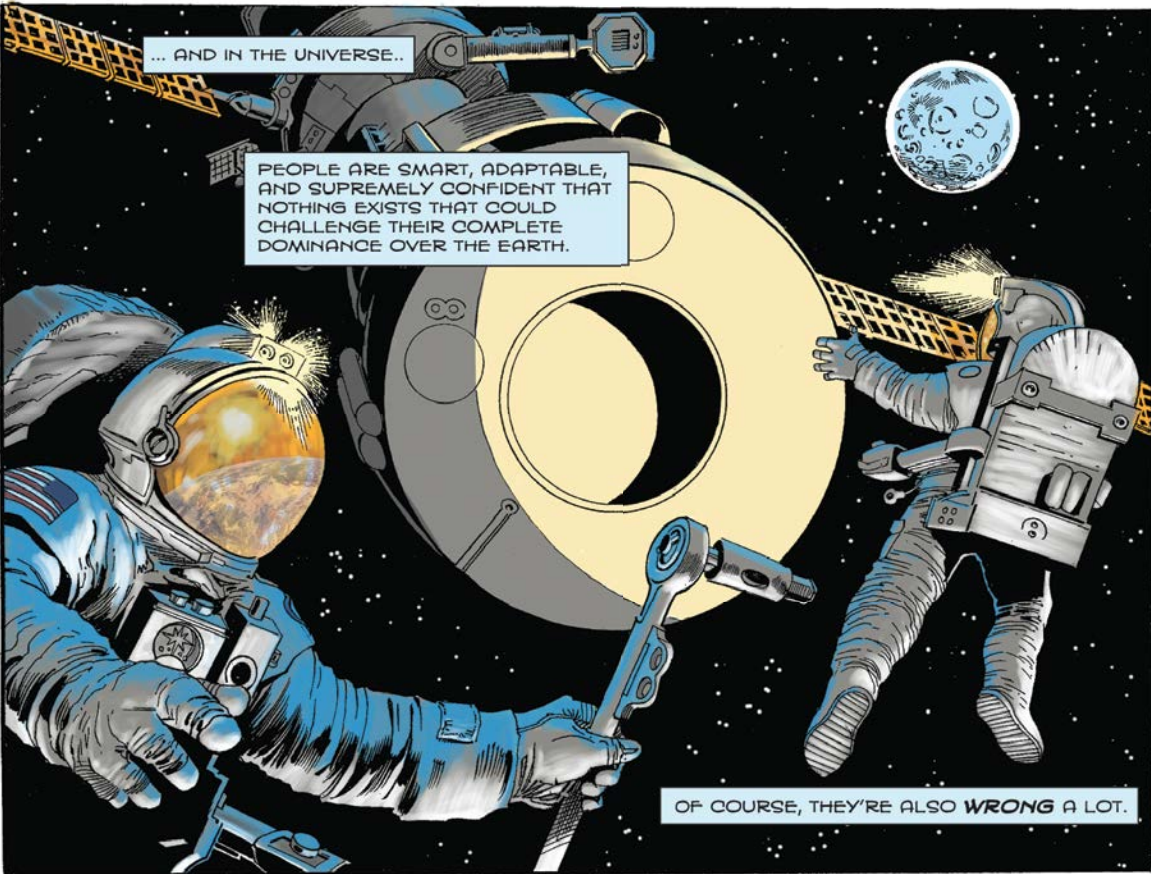
COUNTLESS SPECIES STRUGGLED, FOUGHT, AND RULED THEIR SAVAGE WORLD. THE AGE OF THE REPTILES WENT ON SEEMINGLY WITHOUT END, THEIR DOMINATION ASSURED.

HOWEVER, THE ONLY SURE THING ABOUT THE EARTH IS THAT IT'S ALWAYS IN CONSTANT **CHANGE**...

... AND IT NEVER PLAYS FAVORITES FOR LONG.

A mammoth with large, curved tusks stands in a snowy, prehistoric landscape. Two hunters are visible: one in the foreground on the left, looking towards the mammoth, and another on the right, crouching. The ground is covered in snow and small fires. The background shows a dark sky with stars and a full moon.

THEN, VERY RECENTLY FROM A COSMIC POINT OF VIEW, A NEW CREATURE HAS EVOLVED THAT ALONE AMONG ALL OTHER SPECIES IS CAPABLE OF COMPREHENDING ITS PLACE IN THE WORLD...

Two astronauts in white space suits are working on a large, circular, yellowish metallic structure in space. The astronaut on the left is using a wrench. The astronaut on the right is holding a tool. The Earth is visible in the background, along with the moon and stars.

... AND IN THE UNIVERSE..

PEOPLE ARE SMART, ADAPTABLE, AND SUPREMELY CONFIDENT THAT NOTHING EXISTS THAT COULD CHALLENGE THEIR COMPLETE DOMINANCE OVER THE EARTH.

OF COURSE, THEY'RE ALSO **WRONG** A LOT.

THE CURSE OF THE TREE-MAN

GUESS IT'S
TIME I INTRODUCE
MYSELF.

I'M A VIRUS...
THE **HUMAN
PAPILLOMAVIRUS**,
TO BE EXACT, ALTHOUGH
THERE'S REALLY
NOTHING 'HUMAN'
ABOUT ME.

JUST
CALL ME **HPV**,
ALL THE BEST
SCIENTISTS
DO.

NOW I'M
SURE YOU'VE ALL
HEARD OF VIRUSES,
SOMETHING SO SMALL THAT YOU
THINK WE DON'T EXIST, MADE ONLY
OF PROTEIN AND GENETIC CODE,
YADA YADA. WE'RE BLAMED FOR
EVERYTHING FROM THE FLU TO
SMALLPOX, BUT REALLY WE'RE
VERY MISUNDERSTOOD.

ALL WE
WANT IS A NICE
SAFE PLACE TO
LIVE AND REPRODUCE,
SO JUST LEAVE US
BE AND WE'LL GET
ALONG JUST
FINE.

HMM.
ON SECOND
THOUGHT, MAYBE WE
ARE A LITTLE BIT LIKE
YOU HUMANS,
AFTER ALL!



VIRUSES EXIST IN EVERY SPECIES OF ANIMAL AND PLANT, AND EVEN BACTERIA HAVE THEIR OWN SET OF VIRUSES. SCIENTISTS HAVE ISOLATED **TENS OF THOUSANDS** OF US, OBSERVED THROUGH THEIR ELECTRON MICROSCOPES.

THAT MAKES VIRUSES, LIKE ME, THE MOST **DOMINANT** FORM OF LIFE ON THE PLANET.

KIND OF MAKES YOU WANT TO TREAT ME WITH MORE RESPECT, DOESN'T IT?

THAT WAS A CLOSE ONE.

THIS IS GETTING DANGEROUS! TIME TO GET AWAY FROM THESE BACTERIA!

YOU SEE, VIRUSES CAN ONLY MULTIPLY **INSIDE** OF CELLS, NOT IN THE OUTSIDE ENVIRONMENT.

WE NEED A **HOST**...

...AND THIS **CUT** IN THE SKIN IS AN OPEN INVITATION.





ONCE I'M THROUGH THIS BREACH IN THE SKIN, I'LL HAVE A BETTER LOOK AROUND.



UH-OH...
DENDRITIC
CELLS!

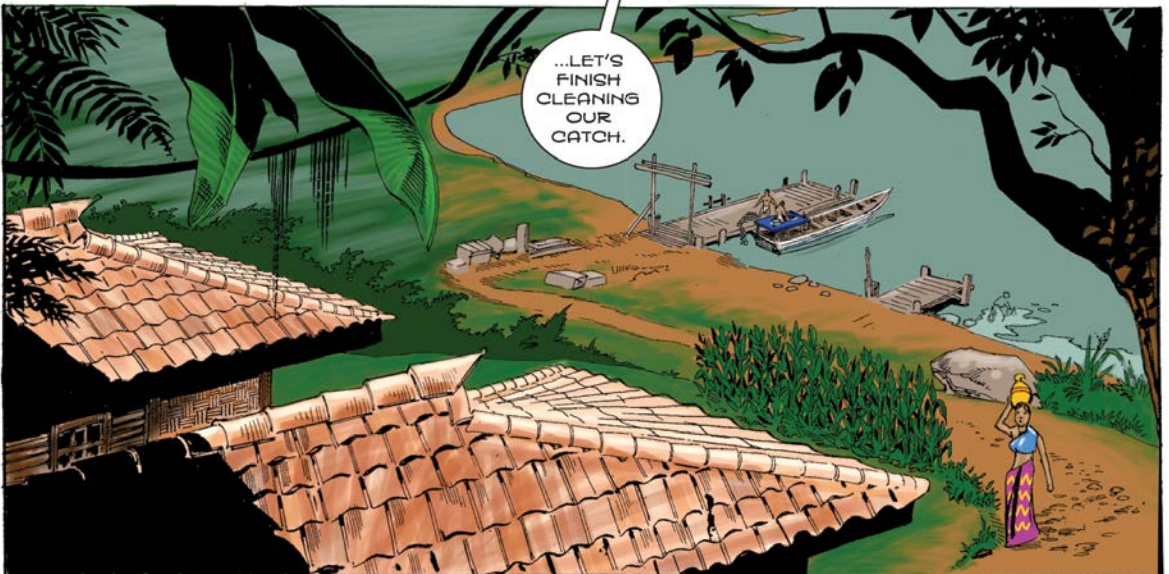
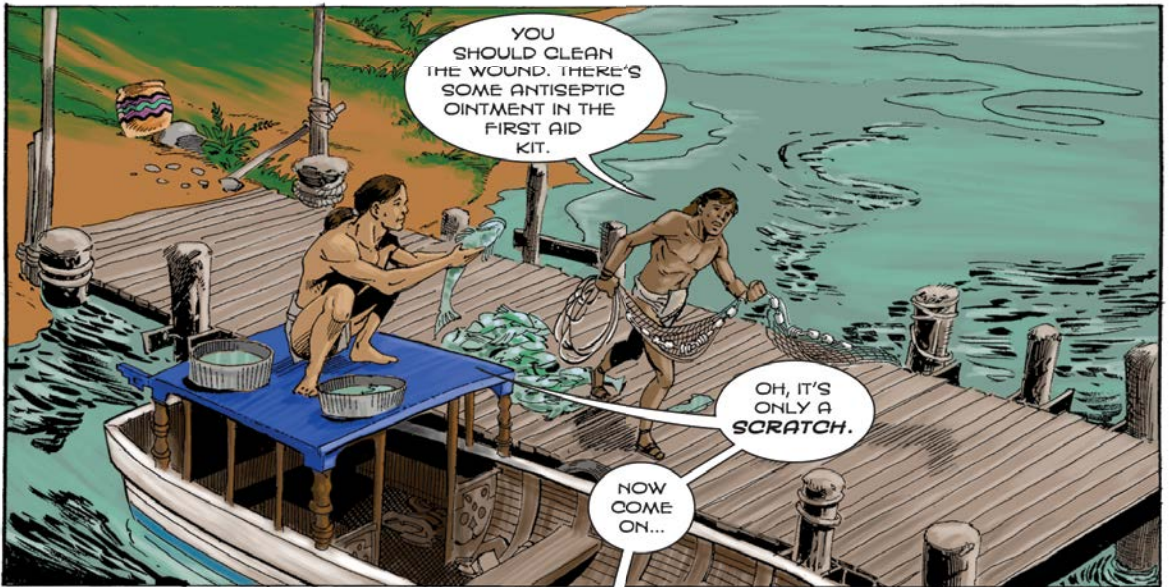
THAT'S WHAT
I WAS AFRAID OF...
MY ARCH-ENEMIES,
IMMUNE CELLS,
READY TO GOBBLE
ME UP!

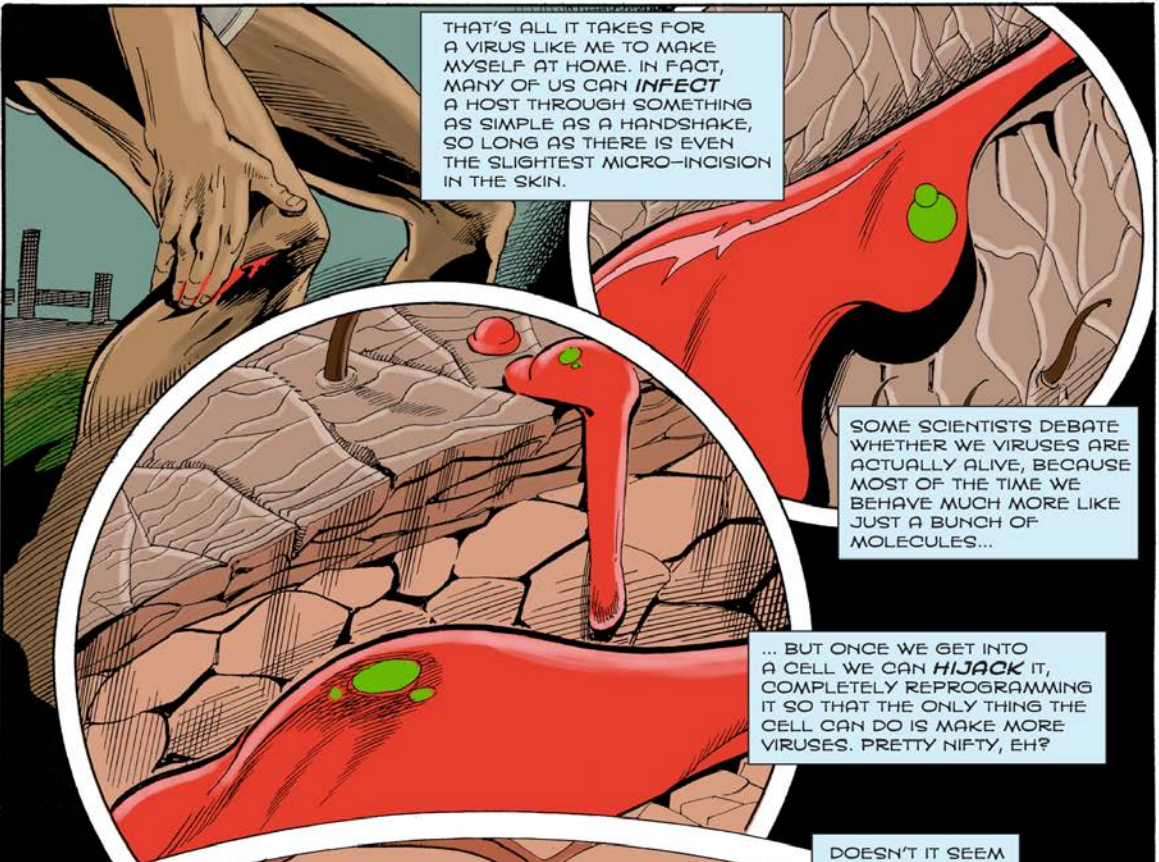


STRANGE...
THERE'S NOT
VERY MANY OF
THEM, FOR SOME
REASON.

THIS
MIGHT BE
MY LUCKY
BREAK! THEY
CAN'T DETECT
ME.

OUCH!






THAT'S ALL IT TAKES FOR A VIRUS LIKE ME TO MAKE MYSELF AT HOME. IN FACT, MANY OF US CAN **INFECT** A HOST THROUGH SOMETHING AS SIMPLE AS A HANDSHAKE, SO LONG AS THERE IS EVEN THE SLIGHTEST MICRO-INCISSION IN THE SKIN.

SOME SCIENTISTS DEBATE WHETHER WE VIRUSES ARE ACTUALLY ALIVE, BECAUSE MOST OF THE TIME WE BEHAVE MUCH MORE LIKE JUST A BUNCH OF MOLECULES...

... BUT ONCE WE GET INTO A CELL WE CAN **HIJACK** IT, COMPLETELY REPROGRAMMING IT SO THAT THE ONLY THING THE CELL CAN DO IS MAKE MORE VIRUSES. PRETTY NIFTY, EH?

DOESN'T IT SEEM LIKE I'M ALIVE?



SOMETIMES WE CAN EVEN TRICK CELLS INTO NOT CRYING OUT FOR HELP FROM **DENDRITIC** OR **T CELLS** THAT WOULD OTHERWISE PROTECT THEM.

SHHH... BE VERY QUIET. EVERYTHING IS FINE.

TRUST ME.



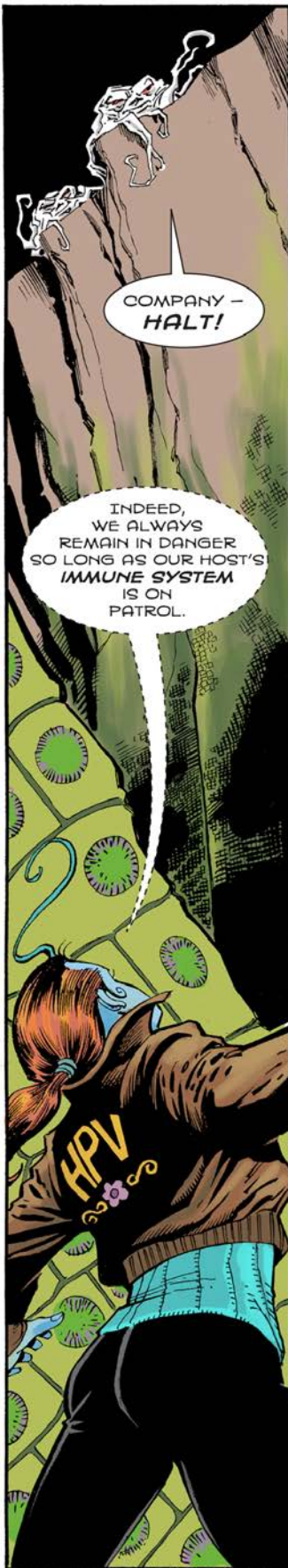
AN AMBITIOUS, FAST-TALKING VIRUS LIKE ME CAN EVEN INSTRUCT THE INFECTED CELLS TO IGNORE THEIR OWN GROWTH-STOPPING COMMANDS AND TO CONTINUE TO *DIVIDE* OUT OF CONTROL...



... CREATING AN ORCHESTRA OF VIRUS FACTORIES!
BEAUTIFUL!



DON'T BE TOO NOISY. WE MUSTN'T DRAW TOO MUCH ATTENTION TO OURSELVES.



COMPANY -
HALT!

INDEED,
WE ALWAYS
REMAIN IN DANGER
SO LONG AS OUR HOST'S
IMMUNE SYSTEM
IS ON
PATROL.



WELL,
THIS SECTOR
CHECKS
OUT.

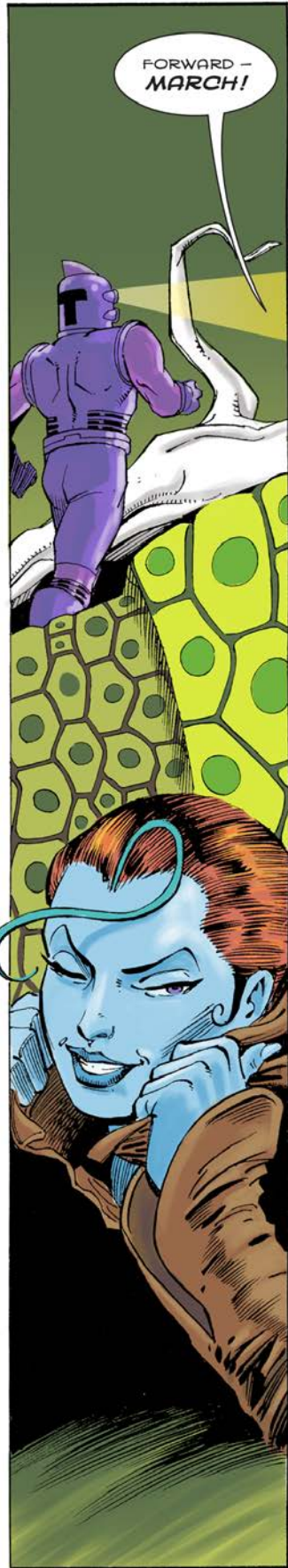
DON'T BE
SO SURE, SOLDIER.
WAY TOO QUIET
OUT THERE.



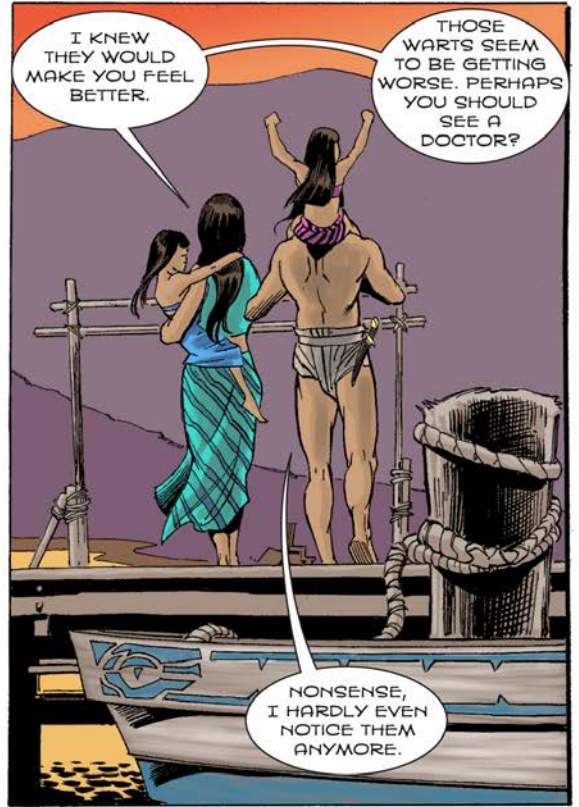
IT'S A
LARGE PERIMETER,
SIR, AND WE'RE
WAY OUTNUMBERED.
THERE JUST AREN'T
ENOUGH OF US OUT
ON PATROL.

CAN'T BE
HELPED. THAT
DOESN'T CHANGE
THE JOB WE HAVE
TO DO.

KEEP
YOUR EYES
PEELED.
TIME TO
MOVE
ON.



FORWARD -
MARCH!





TIME'S GONE BY.
I'VE BECOME QUITE
COMFORTABLE
WITHIN MY HOST.

DEDE'S IMMUNE
SYSTEM PATROLS ARE
SCARCER THAN EVER,
AND I'VE CONTINUED
TO DO THE THING
I'M BEST AT...



... OCCUPYING
MORE AND MORE
TERRITORY.

AHHH...
HOME SWEET
HOME...



HELLO!
YOU'RE DEDE'S
GIRL, AREN'T YOU?
WHERE IS YOUR
FATHER?

HE HASN'T
BEEN ON THIS
BOAT IN
WEEKS.



FATHER
IS VERY SICK,
SIR. HE SAYS
TO TELL YOU
THAT HE CANNOT
WORK
FOR YOU
ANYMORE.

I'M
SORRY, CHILD.
PERHAPS I CAN
HELP HIM.



THANK YOU, SIR...BUT FATHER SAYS THAT NO ONE CAN HELP HIM.

GOOD-BYE.



AND AS THE YEARS PASS...

...THAT'S IT! STEP RIGHT UP! SEE THE TERRIBLE TREE-MAN!

ALIVE! ALIVE! SEE THE TREE-MAN ALIVE, RIGHT BEFORE YOUR EYES!

ONE TICKET, PLEASE.



WELCOME
ONE AND ALL!
WHAT YOU ARE ABOUT
TO SEE WILL THRILL
YOU!

IT WILL
ASTONISH
YOU!!

IT MAY
EVEN
HORRIFY
YOU!!!



PREPARE
YOURSELVES
FOR THE INCREDIBLE,
THE IMPOSSIBLE...



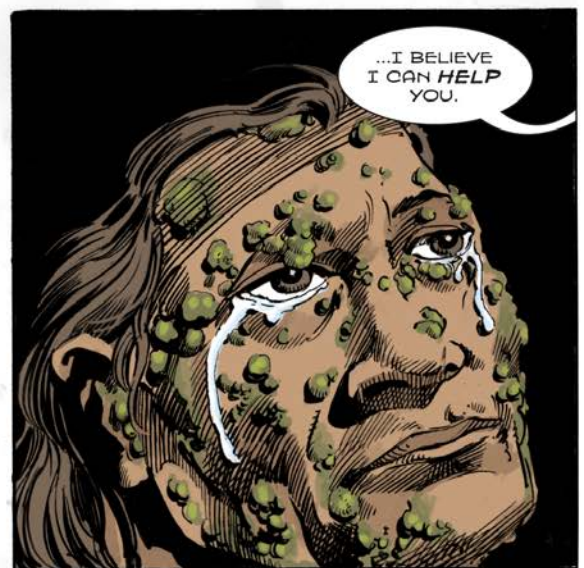
...THE
UNBELIEVABLE...



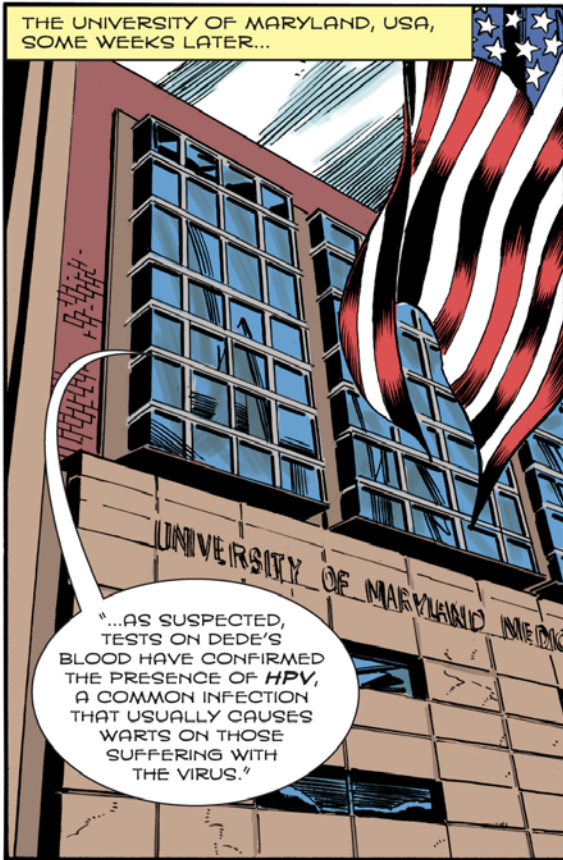
...THE
TERRIBLE
TREE-MAN!!



LATER, AFTER THE CROWD IS GONE...



THE UNIVERSITY OF MARYLAND, USA,
SOME WEEKS LATER...



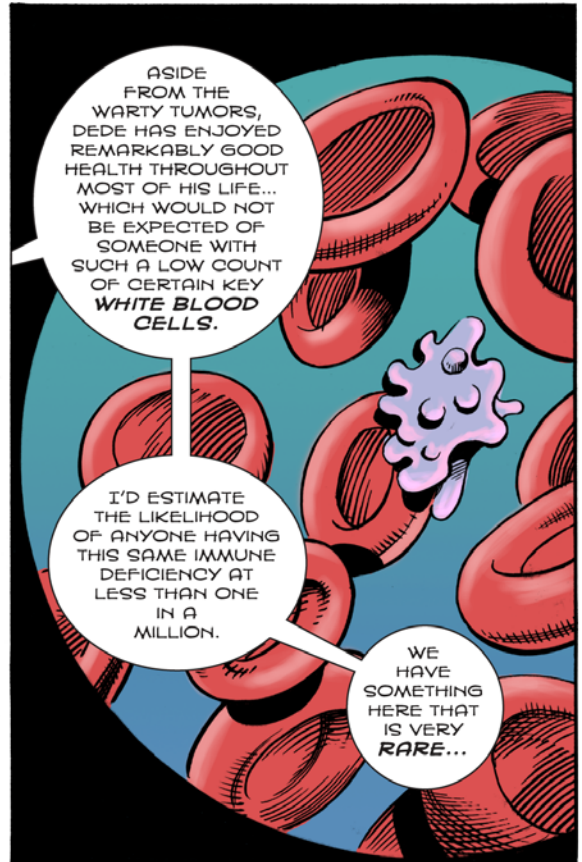
"...AS SUSPECTED,
TESTS ON DEDE'S
BLOOD HAVE CONFIRMED
THE PRESENCE OF **HPV**,
A COMMON INFECTION
THAT USUALLY CAUSES
WARTS ON THOSE
SUFFERING WITH
THE VIRUS."



HOWEVER,
THE MAIN CAUSE OF
DEDE'S UNIQUE PROBLEM
IS AN UNCOMMON
GENETIC FAULT
THAT IMPEDES HIS OWN
NATURAL IMMUNITY,
DENYING HIS BODY'S ABILITY
TO CONTAIN THE DISEASED
GROWTHS, ALLOWING
THEM TO **GROW OUT
OF CONTROL.**



USUALLY
WE'D SUSPECT
THE AIDS VIRUS IN
SUCH A SUPPRESSED
IMMUNE SYSTEM, BUT
DEDE TESTED
NEGATIVE
FOR HIV.



ASIDE
FROM THE
WARTY TUMORS,
DEDE HAS ENJOYED
REMARKABLY GOOD
HEALTH THROUGHOUT
MOST OF HIS LIFE...
WHICH WOULD NOT
BE EXPECTED OF
SOMEONE WITH
SUCH A LOW COUNT
OF CERTAIN KEY
**WHITE BLOOD
CELLS.**

I'D ESTIMATE
THE LIKELIHOOD
OF ANYONE HAVING
THIS SAME IMMUNE
DEFICIENCY AT
LESS THAN ONE
IN A
MILLION.

WE
HAVE
SOMETHING
HERE THAT
IS VERY
RARE...





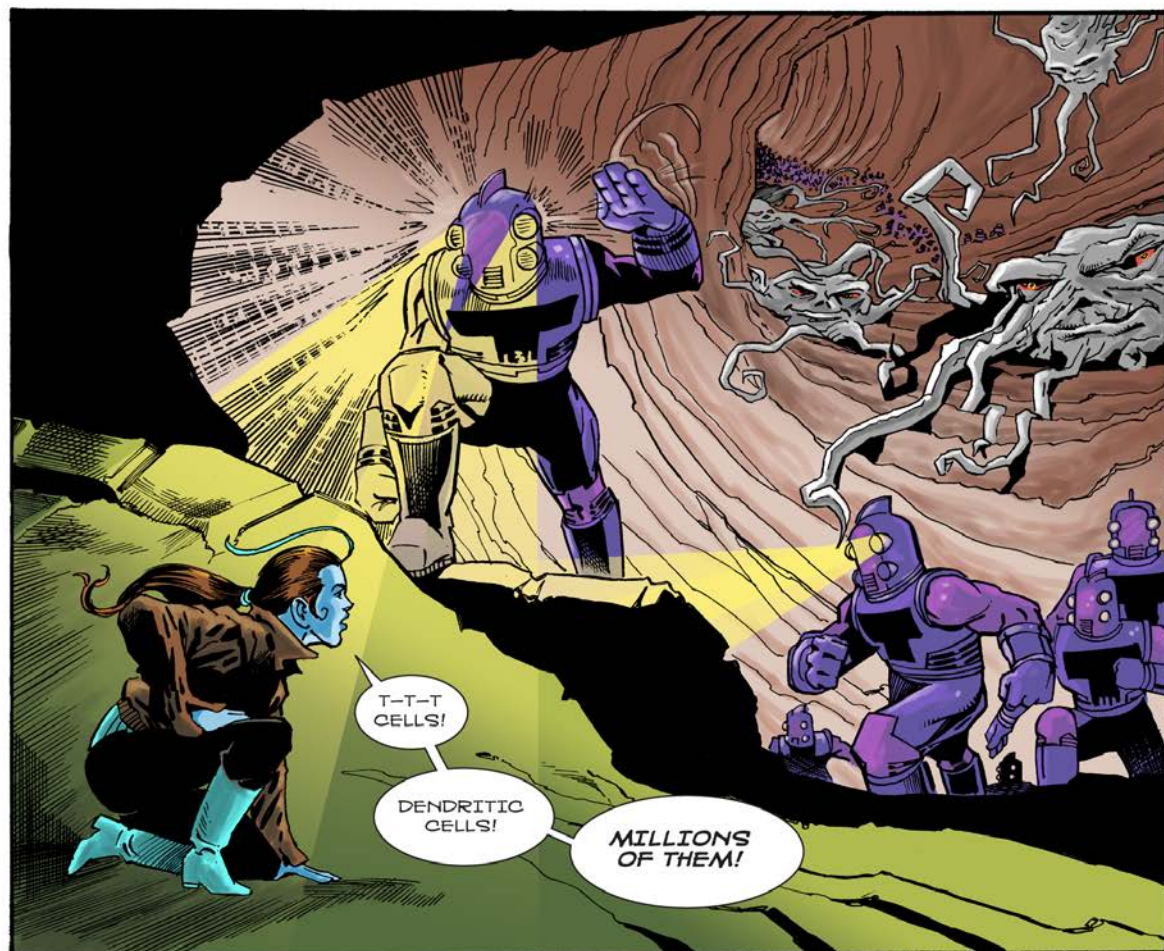
...THEN THE MOST STUBBORN GROWTHS
COULD BE FROZEN OFF OR SURGICALLY
REMOVED...

I...
I DON'T FEEL
SO GOOD...



...AND YOU CAN RETURN TO A NORMAL
LIFE AGAIN."

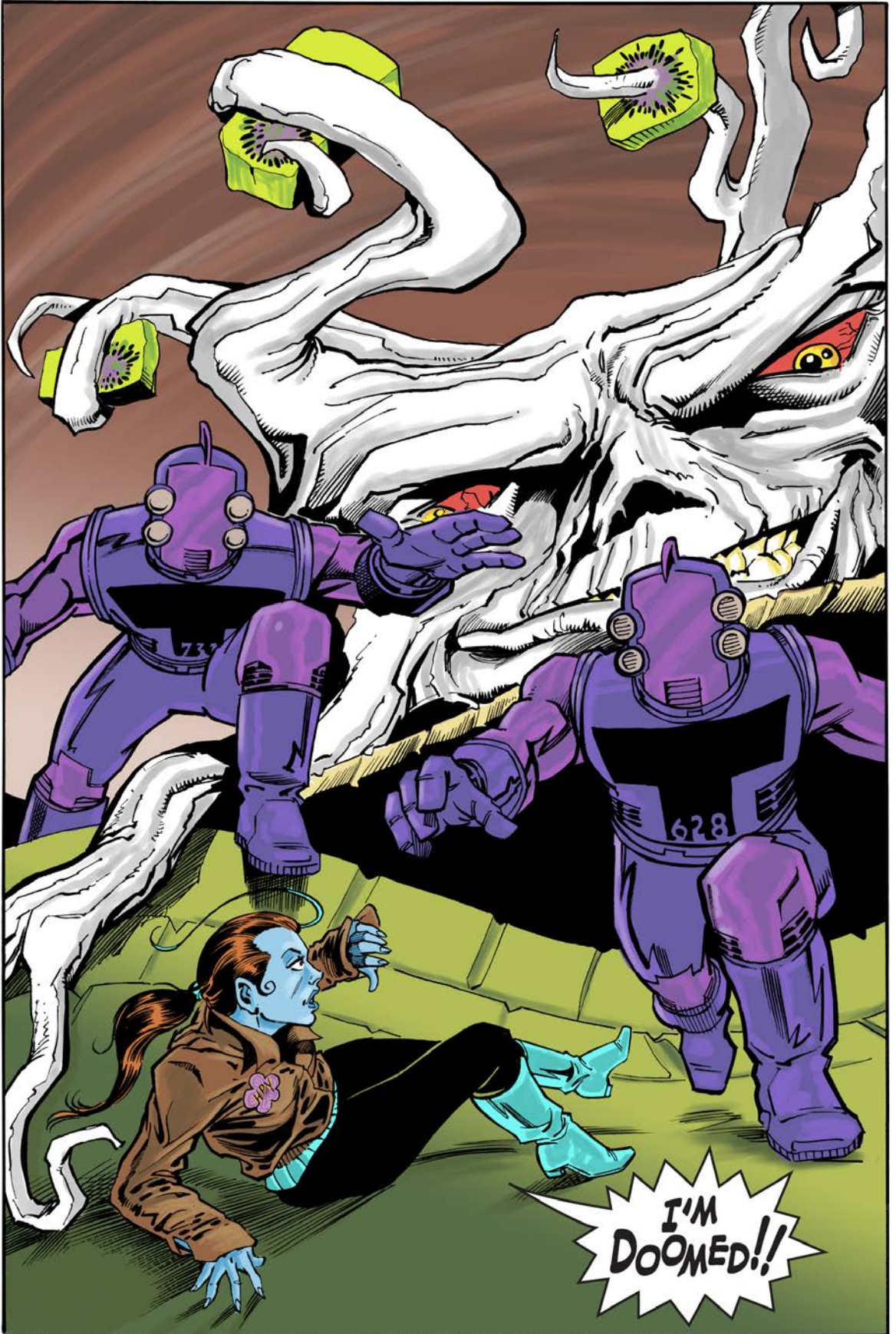
NO...
OH NO... IT
CAN'T
BE...!



T-T-T
CELLS!

DENDRITIC
CELLS!

MILLIONS
OF THEM!



I'M
DOOMED!!



SIX MONTHS LATER...

I HAVE MY LIFE BACK AGAIN, THANKS TO YOU DOCTORS. THE SORROWFUL 'TREE-MAN' HAS VANISHED LIKE A BAD DREAM.



THERE ARE, IN TRUTH, FAR MORE VIRUSES ON OUR PLANET THAN THERE ARE VISIBLE STARS IN THE NIGHT SKIES!



THEY ARE EVERYWHERE...

...INVISIBLE...

...INESCAPABLE...



...AND MAY SPREAD TO ANYONE.



HI, I'M HPV!

WE MAY LOSE A BATTLE, HERE AND THERE... BUT THE **WAR** CONTINUES...

END?