

Manfredi Toraldo

Francesco Mobili

RITA LEVI-MONTALCINI

a pioneer in neuroscience



Senato della Repubblica



EBRI

European Brain Research Institute
Rita Levi-Montalcini

Realizzato a cura del Senato della Repubblica
e della Fondazione EBRI Rita Levi-Montalcini
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Fondazione EBRI Rita Levi-Montalcini

Courtesy translation by Pina Moliterno

“Life does not end with death. What you pass on to others remains. Immortality is not the body, which will one day die. That does not matter... of importance is the message you leave to others. That is immortality.”

Rita Levi-Montalcini

Throughout her life, Rita Levi-Montalcini demonstrated deep commitment and dedication to transmitting values and knowledge. This graphic novel entitled *‘Rita Levi-Montalcini: a pioneer in neuroscience’*, produced in collaboration with the *Scuola Internazionale di Comics di Jesi*, has been freely adapted from Levi-Montalcini’s autobiography *‘In Praise of Imperfection’* and from accounts of her daily life from collaborators. Designed particularly for high school students, this graphic novel describes the life of an extraordinary woman who is a symbol of hope, courage and strength. We hope this little booklet will be a source of inspiration to those who did not have the fortune to meet Rita, and that her example will give them the confidence to face the challenges that life brings.

Francesca Malerba, Enrico Cherubini
European Brain Research Institute
‘Rita Levi-Montalcini’

I am very pleased that the life story of Rita Levi-Montalcini is brought to the attention of young students through this delightful short graphic novel. This booklet presents the extraordinary life of a small grand woman whose image and personality will remain an integral part of a century of history, with contributions in the cultural, scientific, political and social fields. Levi-Montalcini had a captivating elegance, enchanting intelligence, great tenacity and, despite her age, was always oriented towards the future.

Her important contribution to the advancement of neurological sciences, which earned her the 1986 Nobel Prize in Physiology and Medicine for the discovery of the Nerve Growth Factor, does not complete her rich multifaceted and exceptional profile. She faced every stage of her life with great determination and tenacity, but always putting in first place freedom of will.

She received her medical degree from the University of Turin in 1936, as you will learn in the following pages, and had to face serious difficulties which she endured with courage and strength. She was a victim of the Fascist racial laws, which forbade Jews from conducting research activity, thereby forcing her to continue her research first in Belgium and shortly after in a makeshift laboratory in the bedroom of her home in Turin.

At that time she was 30 years old with an objective that not even the World War II bombings could hinder. She wanted to understand the factors that regulate nerve fiber growth in the nervous system. In that bedroom, with head bent on the microscope studying chick embryos, she conducted experiments that would later bring her to the discovery for which she was awarded the Nobel Prize. After the war she moved to the United States to continue her research studies, so as to overcome the obstacles imposed by the barbaric racial laws.

She was fully devoted to her research, which was conducted with great

fervor and without getting sidetracked by the success that she would obtain. She was always concerned about educating the young and training a new generation of scientists, fighting against nepotism, favoritism and political pressures. Rita Levi-Montalcini always embraced the values of freedom and democracy, serving with dedication to the individual institutions. In 2001 she was nominated senator-for-life by Italian President Carlo Azeglio Ciampi for her outstanding achievements in the scientific and social fields. She is an example of how we must always invest resources and effort in scientific research. Senator Levi-Montalcini said that knowledge must be considered a moral obligation of all individuals, both as human beings and even more so as scientists and educators. She also believed that life has a value if we do not focus only on ourselves, but also on the world around us. Behind her apparent fragility there was a hurricane of ideas, an impetus to know more and to go forward. Her legacy will stand the test of time. She did not fear death and always said - the body dies, but the messages we have sent in our life remain - and the important messages she has left are many. Now it's up to you, boys and girls, to learn from her example and continue your studies with passion and tenacity, whatever field you wish to pursue.

Pietro Grasso

President of the Italian Senate

I first learned of Rita Levi Montalcini through her books; later, in the last twenty years of her extraordinary life, I was very fortunate to meet and talk with her during various meetings.

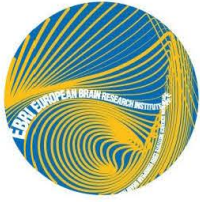
One of our last public encounters was in 2008 at the University of Milan, where she spoke to almost a thousand students. She was 99 years old then and I remember that she stood on the stage for an hour, showing no signs of weariness. She seemed to gain strength from her own words, from the story of her discovery. There was something magnetic about her, something so captivating that you couldn't help but listen to her every word.

Rita Levi Montalcini is a symbol of strength, determination, confidence and enthusiasm. She embodies all the values of science. Through her life story, you will be able to understand the challenges that scientists face every day and the courage that is needed to pursue and achieve your goals.

She had to overcome the stereotype of women as 'wives and mothers', and as a Jew she was forced to flee more than once to escape from Nazi persecution. In spite of all this, she continued her studies and even set up a small laboratory in her own house so that she could work on her ideas. She prided herself on her intuition and was able to turn an idea into a fantastic discovery. Thanks to her determination, she was able to win important challenges and she will be remembered as an emblem of freedom and courage in science.

Rita Levi Montalcini was a tireless communicator and always maintained an active relationship with the younger generation. I am certain that she would be delighted to know that her life and passion for research is being told through a graphic novel; a form of communication that is very direct, effective and very close to the students she loved to meet.

Elena Cattaneo



The **European Brain Research Institute (EBRI)** is a non-profit international research institute fully devoted to studies in the Neurosciences. The Institute, founded in 2002 by the Nobel Laureate Rita Levi-Montalcini, is an interdisciplinary research centre designed to spearhead Italian neuroscience.

Its objective is to investigate fundamental questions of the development and functional organization of the brain, from molecules to behaviour to high cognitive functions. The Institute strives to harness discoveries for the prevention and treatment of neuropsychiatric disorders including autism, schizophrenia, epilepsy, Parkinson's and Alzheimer's disease and other forms of dementia. EBRI's vision is that daunting tasks facing neuroscience can only be solved through a highly interdisciplinary and integrated effort, also involving the exploitation and development of new technologies from different fields.

www.ebri.it



I Lincei per la Scuola Fondazione

The ‘**I Lincei per la Scuola**’ **Foundation** was established in 2015, with headquarters at the Accademia Nazionale dei Lincei in

Rome. The Foundation stems from the belief that the Italian school system can do much more for the critical education of citizens, particularly in the sciences; in consonance with the vision of Prof. Rita Levi-Montalcini, who was a great supporter of this cause.

The Foundation aims at promoting a new educational approach in schools, based on the experimental method, specifically through the national project “I Lincei per una nuova didattica nella scuola: una rete nazionale” (The Lincei for a new educational approach: a national network). To this end, it offers teaching activities for Italian teachers in three disciplines: Italian, Mathematics and Science. Refresher courses are available throughout the country, thanks to a network of more than 25 pilot centres located in Italian universities or prestigious science academies.

The Foundation is presided by Prof. Lamberto Maffei, supported by a Scientific Council and is privileged to have Giorgio Napolitano as its honorary President.

<http://www.fondazioneinceiscuola.it/>

THE EUROPEAN
DANA ALLIANCE
FOR THE BRAIN



The **European Dana Alliance for the Brain (EDAB)**

is an organization of more than 260 eminent brain scientists from 33 countries. In addition to full members, EDAB is comprised of term members, who are recognized for their Brain Awareness Week (BAW) outreach efforts. Launched in 1997, and modeled on the US-based Dana Alliance for the Brain Initiatives, EDAB is committed to enhancing the public’s understanding of why brain research is so important. Every March, EDAB members coordinate and participate in BAW, during which hundreds of public events in dozens of countries celebrate the progress of brain research.

<http://www.dana.org/About>

Manfredi Toraldo

Francesco Mobili

RITA LEVI-MONTALCINI

a pioneer in neuroscience

I WAS BORN IN **TURIN** AND LIVED THERE DURING MY SCHOOL YEARS AND UNIVERSITY EDUCATION.



IN A BEAUTIFUL NINETEENTH-CENTURY BUILDING OVERLOOKING THE STATUE OF VITTORIO EMANUELE II AND THE LARGE SYCAMORE TREES WHICH LINED THE BOULEVARDS OF THE CITY.

**TURIN,
ITALY,
1914.**



MY SISTER PAOLA AND I ARE TWINS. I REMEMBER AS IF IT WERE YESTERDAY, TURIN UNDER THE SNOW... THE NANNY TAKING US FOR A WALK.



ESPECIALLY **GIOVANNA**.

OF ALL THE NANNIES WE HAVE HAD, GIOVANNA WAS THE ONE WE WERE MOST ATTACHED TO SENTIMENTALLY....SHE WAS ONE OF THE FAMILY.

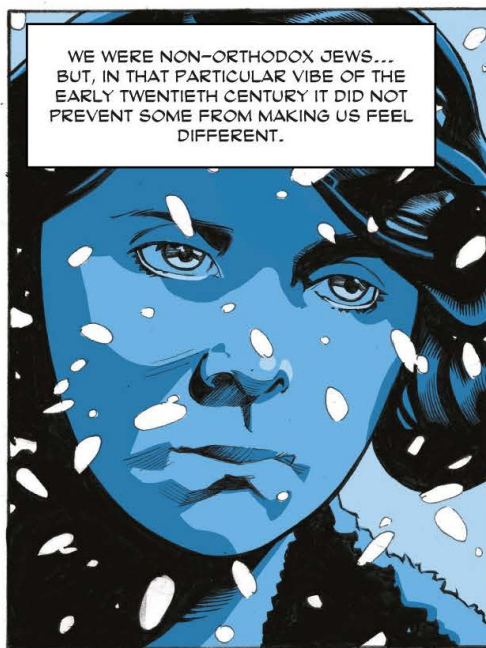


WE WERE A JEWISH FAMILY ...AND GIOVANNA WAS CATHOLIC, BUT FOR US THIS FELT COMPLETELY NORMAL.



ADAMO (MY FATHER) AND MY MOTHER, ADELE WITH GINO, ANNA, PAOLA, RITA AND GIOVANNA.

WE WERE NON-ORTHODOX JEWS... BUT, IN THAT PARTICULAR VIBE OF THE EARLY TWENTIETH CENTURY IT DID NOT PREVENT SOME FROM MAKING US FEEL DIFFERENT.



INDEED, WE WERE A PARTICULAR FAMILY.

AND YET, HE NEVER ADVOCATED THE SO-CALLED MALE SUPERIORITY, TYPICAL OF THAT TIME.

MY FATHER WAS A MAN TIED TO THE PATRIARCHAL TRADITION TYPICAL OF THOSE YEARS. HE LOVED HIS FAMILY, BUT HE WAS THE ONE TO DECIDE WHAT COULD OR COULD NOT BE DONE AT HOME.

MY SISTER TINA IS NO DOUBT THE SMARTEST IN MY FAMILY.

I LOVED MY FATHER VERY MUCH, BUT DID NOT SHOW IT WITH THE SAME EXUBERANCE THAT IS COMMON IN OTHER CHILDREN.

UNLIKE MY SISTER PAOLA.

DADDY DON'T GO!

DON'T WORRY LITTLE ONE ...I'M JUST GOING TO BARI TO CHECK ON THE FACTORY AND WILL BE RIGHT BACK...

PAOLA WOULD BECOME AN ARTIST... A PAINTER.

JUST LIKE OUR MOTHER.

GINO, WHO IS SEVEN YEARS OLDER THAN I, WOULD BECOME A SCULPTOR AND ARCHITECT.

ANNA, FOUR YEARS OLDER THAN PAOLA AND I, WOULD BECOME A GOOD MOTHER AND HOUSEWIFE.

ME...



...I ON THE OTHER HAND DID NOT FEEL INCLINED TO HAVE A FAMILY... BUT I DID NOT KNOW WHAT I WANTED TO BE.



THAT WAS UNTIL GIOVANNA GOT SICK.

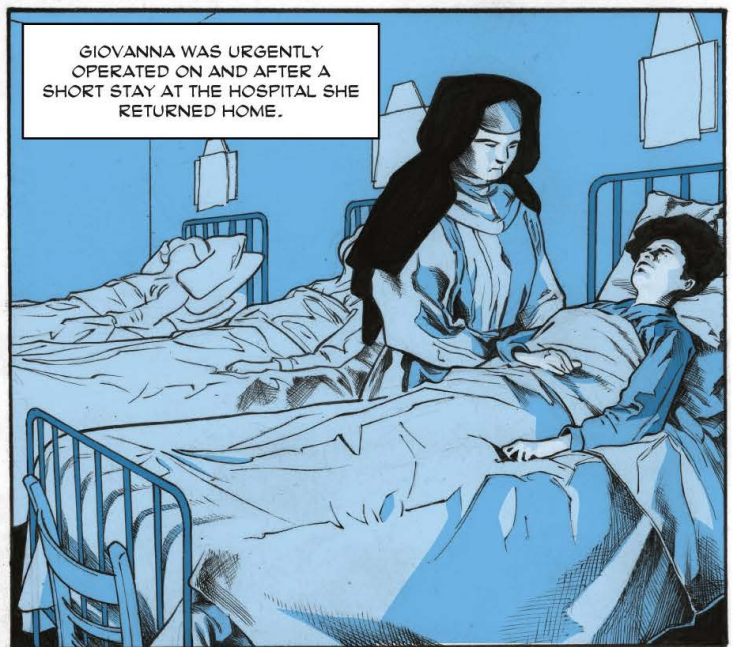


SHE WAS LIKE A SECOND MOTHER TO US AND I WAS DEVASTATED WHEN I LEARNED OF HER HEALTH PROBLEMS.



WHAT DOES THE DOCTOR SAY MAMMA?

ALAS... LITTLE ONE... GIOVANNA... MUST BE ADMITTED TO THE HOSPITAL...



GIOVANNA WAS URGENTLY OPERATED ON AND AFTER A SHORT STAY AT THE HOSPITAL SHE RETURNED HOME.

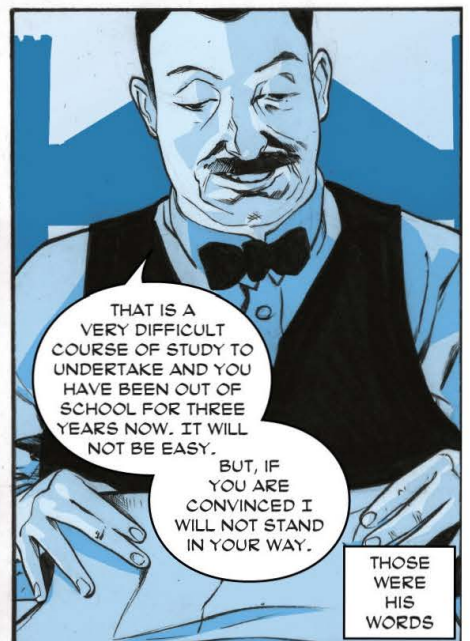


GIOVANNA I WILL STUDY MEDICINE SO THAT I CAN CURE YOU...

MY CHILD... WHEN YOU BECOME A DOCTOR I WILL ALREADY BE IN THE ELYSIAN FIELDS.



THOSE WERE HER EXACT WORDS.



THE ABSENCE OF COMPLEXES AND MY OWN TENACITY, ALLOWED ME TO UNDERESTIMATE THE OBSTACLES THAT I WOULD ENCOUNTER IN LIFE...NOT LEAST THE FACT THAT ITALY WAS NOW STARTING TO SERIOUSLY SUFFER FROM THE FASCIST REGIME.

BUT THE RACIAL LAWS WERE STILL FAR OFF.

I NOW HAD TO PASS THE MEDICAL ADMISSIONS EXAM.

FOR EIGHT MONTHS I STUDIED FOR THE EXAM, TOGETHER WITH MY COUSIN *EUGENIA*.

WE WOULD GET UP AT FOUR IN THE MORNING TO STUDY, ALSO DURING OUR SUMMER VACATION AT THE MOUNTAINS.

IN OCTOBER I PASSED THE EXAM WITH THE HIGHEST SCORE! I WAS VERY PROUD OF MYSELF.

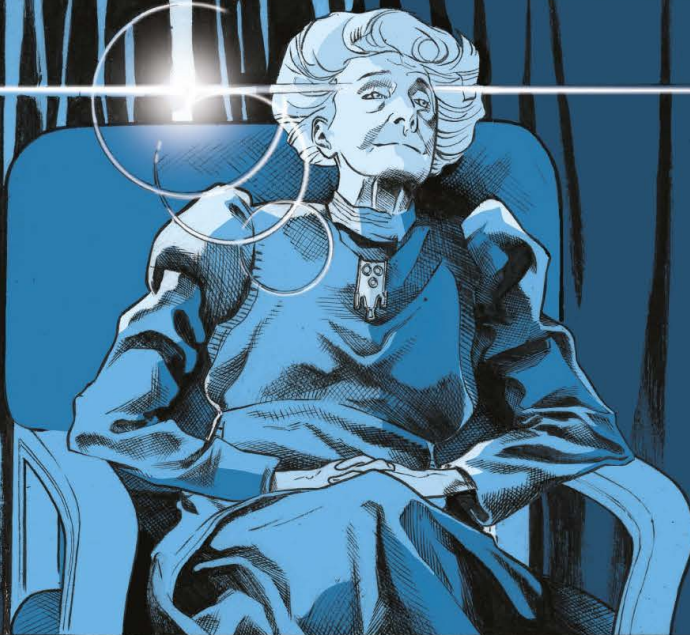
IN THE AUTUMN OF 1930 FOR THE FIRST TIME, I ENTERED THE SOMBRE AMPHITHEATRE OF THE INSTITUTE OF ANATOMY OF THE TURIN SCHOOL OF MEDICINE.

THERE WERE *SEVEN* OF US GIRLS IN THE MEDICAL COURSE, INCLUDING ME AND MY COUSIN.

THE ANATOMY CLASS WAS FRIGHTENING. BUT NOT BECAUSE OF THE CORPSE THAT WAS ON THE TABLE...

THE CAUSE OF OUR REVERENTIAL FEAR AND AWE WAS THE 'MAESTRO' *GIUSEPPE LEVI*, WHO WAS LEGENDARY FOR HIS FITS OF RAGE.

IT WAS AN IMPORTANT PERIOD OF MY LIFE, DESPITE BEING VERY DEMANDING. I WAS VERY HAPPY BECAUSE I FELT THAT I HAD FOUND THE RIGHT DIRECTION IN LIFE.



FEELING A BIT AWKWARD AND SHY, I WAS MAKING ACQUAINTANCE WITH THE OTHER STUDENTS.



HELLO, AND YOU ARE?

ME?



MY NAME IS RITA, WHAT IS YOUR NAME?

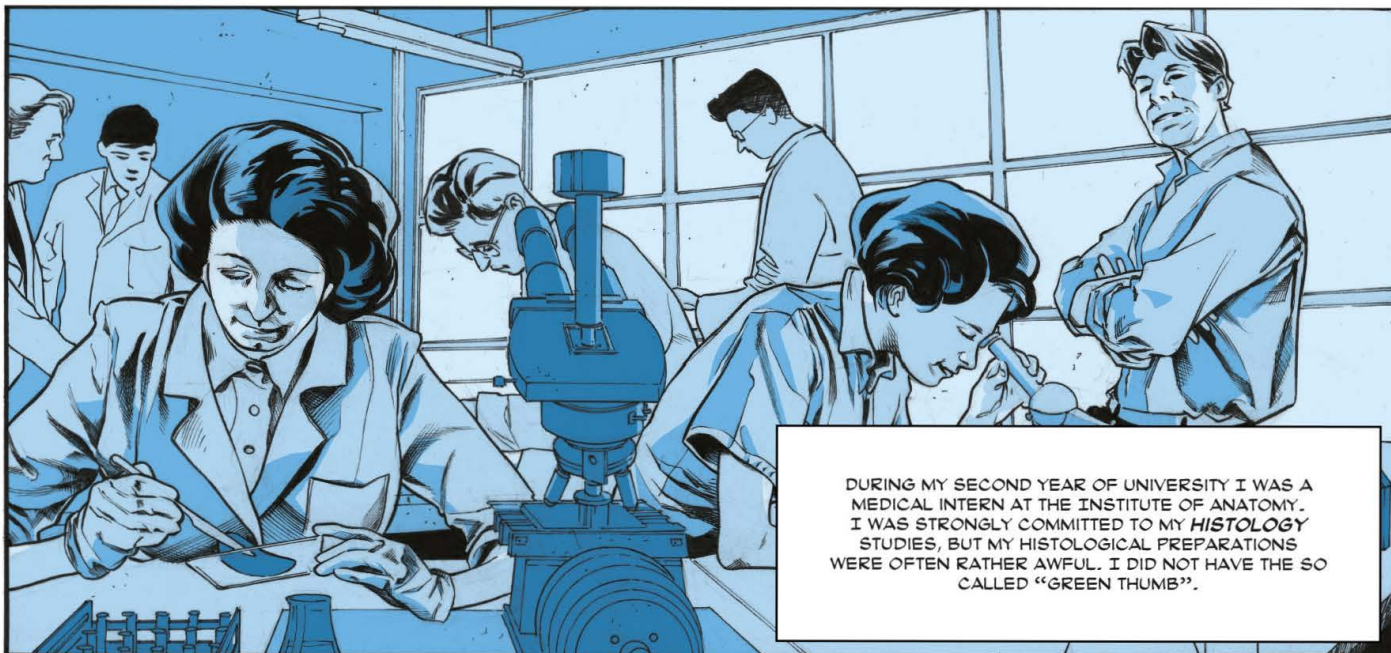
DULBECCO, RENATO
DULBECCO. I AM ALSO
A STUDENT HERE...



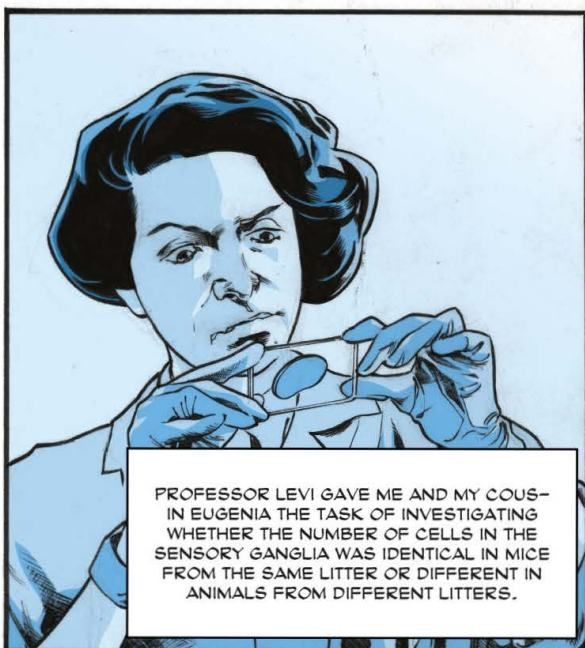
IN 1975 THAT STUDENT WOULD BE AWARDED THE NOBEL PRIZE IN MEDICINE.



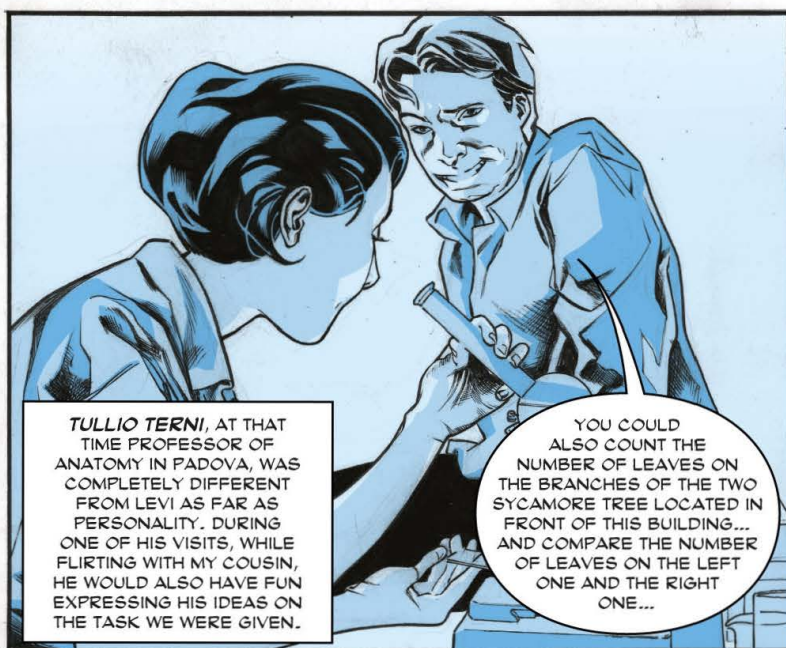
TWO YEARS AFTER I MET RENATO, MY FATHER PASSED AWAY. LEAVING AN INDELIBLE MARK IN MY LIFE.



DURING MY SECOND YEAR OF UNIVERSITY I WAS A MEDICAL INTERN AT THE INSTITUTE OF ANATOMY. I WAS STRONGLY COMMITTED TO MY **HISTOLOGY** STUDIES, BUT MY HISTOLOGICAL PREPARATIONS WERE OFTEN RATHER AWFUL. I DID NOT HAVE THE SO CALLED "GREEN THUMB".



PROFESSOR LEVI GAVE ME AND MY COUSIN EUGENIA THE TASK OF INVESTIGATING WHETHER THE NUMBER OF CELLS IN THE SENSORY GANGLIA WAS IDENTICAL IN MICE FROM THE SAME LITTER OR DIFFERENT IN ANIMALS FROM DIFFERENT LITTERS.



TULLIO TERNI, AT THAT TIME PROFESSOR OF ANATOMY IN PADOVA, WAS COMPLETELY DIFFERENT FROM LEVI AS FAR AS PERSONALITY. DURING ONE OF HIS VISITS, WHILE FLIRTING WITH MY COUSIN, HE WOULD ALSO HAVE FUN EXPRESSING HIS IDEAS ON THE TASK WE WERE GIVEN.

YOU COULD ALSO COUNT THE NUMBER OF LEAVES ON THE BRANCHES OF THE TWO SYCAMORE TREE LOCATED IN FRONT OF THIS BUILDING... AND COMPARE THE NUMBER OF LEAVES ON THE LEFT ONE AND THE RIGHT ONE...

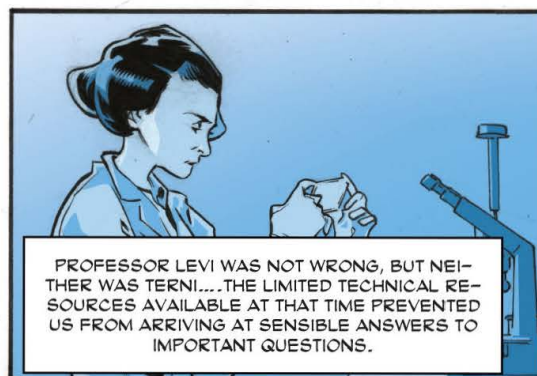


IT MIGHT BE DIFFICULT TO EVALUATE IF THE DIFFERENCES ARE TO BE ASCRIBED TO THE VARYING EXPOSURE TO SUNLIGHT OR TO OTHER CAUSES, BUT THAT IS THE FATE OF THE MAJORITY OF THE RESEARCH WE DO...

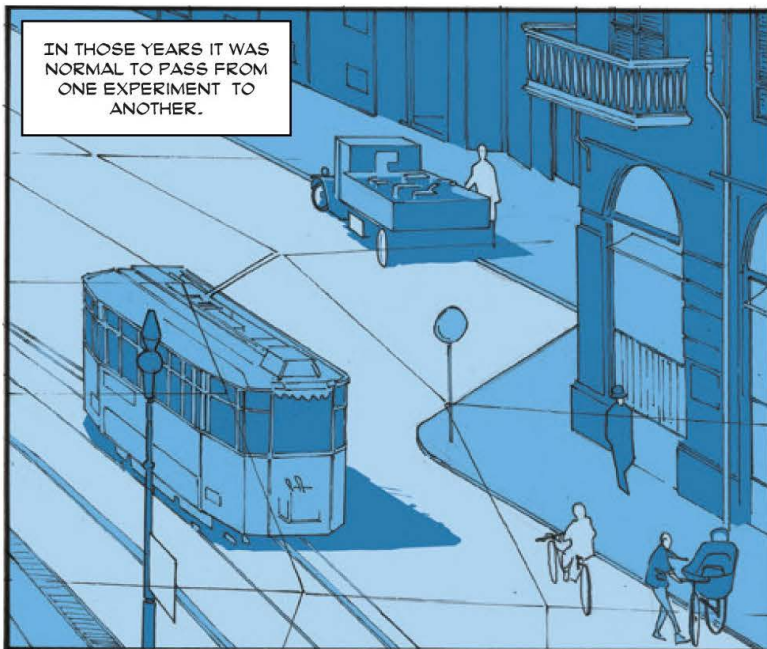


I ADMIRE THE MAESTRO VERY MUCH

BUT HE HAS THE HABIT OF GIVING STUDENTS FUTILE ASSIGNMENTS SUCH AS THIS ONE...



PROFESSOR LEVI WAS NOT WRONG, BUT NEITHER WAS TERNI....THE LIMITED TECHNICAL RESOURCES AVAILABLE AT THAT TIME PREVENTED US FROM ARRIVING AT SENSIBLE ANSWERS TO IMPORTANT QUESTIONS.



IN THOSE YEARS IT WAS NORMAL TO PASS FROM ONE EXPERIMENT TO ANOTHER.



AT THE BEGINNING OF MY FOURTH UNIVERSITY YEAR I WAS ASSIGNED ANOTHER IMPOSSIBLE TASK.



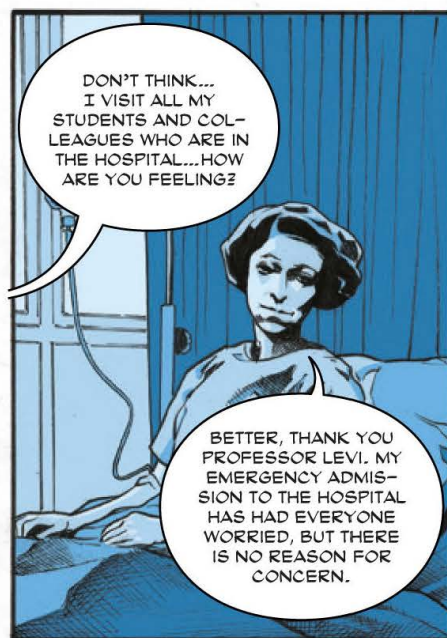
MY TERRIBLE HISTOLOGICAL PREPARATIONS, WHICH LEVI REFERRED TO AS 'RUBBISH', PLACED ME ON HIS BLACKLIST.

YOU MUST STUDY **HOW** AND ON WHAT **BASIS BRAIN PROCESSES** ARE FORMED IN THE HUMAN FETUS.



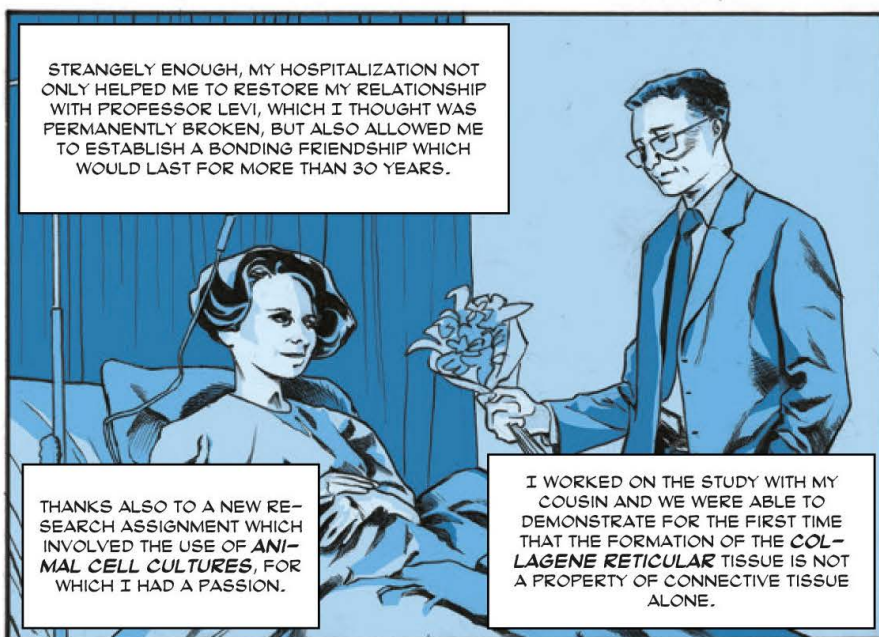
DURING THAT TIME I GOT SICK AND HAD TO BE URGENTLY ADMITTED TO THE HOSPITAL.

SCOFFS
SCOFFS



DON'T THINK... I VISIT ALL MY STUDENTS AND COLLEAGUES WHO ARE IN THE HOSPITAL...HOW ARE YOU FEELING?

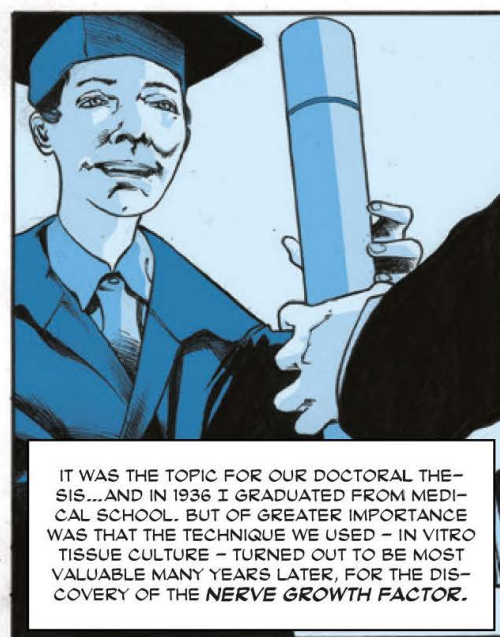
BETTER, THANK YOU PROFESSOR LEVI. MY EMERGENCY ADMISSION TO THE HOSPITAL HAS HAD EVERYONE WORRIED, BUT THERE IS NO REASON FOR CONCERN.



STRANGELY ENOUGH, MY HOSPITALIZATION NOT ONLY HELPED ME TO RESTORE MY RELATIONSHIP WITH PROFESSOR LEVI, WHICH I THOUGHT WAS PERMANENTLY BROKEN, BUT ALSO ALLOWED ME TO ESTABLISH A BONDING FRIENDSHIP WHICH WOULD LAST FOR MORE THAN 30 YEARS.

THANKS ALSO TO A NEW RESEARCH ASSIGNMENT WHICH INVOLVED THE USE OF **ANIMAL CELL CULTURES**, FOR WHICH I HAD A PASSION.

I WORKED ON THE STUDY WITH MY COUSIN AND WE WERE ABLE TO DEMONSTRATE FOR THE FIRST TIME THAT THE FORMATION OF THE **COLLAGENE RETICULAR TISSUE** IS NOT A PROPERTY OF CONNECTIVE TISSUE ALONE.



IT WAS THE TOPIC FOR OUR DOCTORAL THESIS...AND IN 1936 I GRADUATED FROM MEDICAL SCHOOL. BUT OF GREATER IMPORTANCE WAS THAT THE TECHNIQUE WE USED - IN VITRO TISSUE CULTURE - TURNED OUT TO BE MOST VALUABLE MANY YEARS LATER, FOR THE DISCOVERY OF THE **NERVE GROWTH FACTOR**.

...CORRIERE DELLA SERA

ABBONAMENTI	Italia Impero Colonia			Estero		
	Anno	Sem.	Trim.	Anno	Sem.	Trim.
Sei numeri settimanali	L. 75,-	L. 38,-	L. 20,-	L. 160,-	L. 81,-	L. 41,-
Col settimo numero	87,-	44,-	23,-	186,-	94,-	48,-

A Milano gli abbonamenti si ricevono in via S. Margherita, 16 e in via Solferino 28.
 C. C. postale n. 3/55 - Telet. del Corriere: 85.041, 85.047, 85.048, 85.044, 86.786, 86.788.

Prezzi degli abbonamenti ai periodici per gli abbonati al "Corriere".

LA DOMENICA DEL CORRIERE		CORRIERE DI PICCOLO		LA LETTURA		IL ROMANZO MENSIILE	
Italia: A. L. 17, Sem. L. 9, Trim. L. 5.	Italia: A. L. 17, Sem. L. 9, Trim. L. 5.	Italia: A. L. 12, Sem. L. 12, Trim. L. 6,50	Italia: A. L. 12, Sem. L. 12, Trim. L. 6,50	Italia: A. L. 18, Sem. L. 9,50 Trim. L. 5.			
Estero: » 35, » 18, » 10.	Estero: » 35, » 18, » 10.	Estero: » 33, » 17, » 9.	Estero: » 33, » 17, » 9.	Estero: » 28, » 14,50 » 7,5.			

Gli abbonamenti annuali ai periodici devono essere la stessa durata dell'abbonamento al quotidiano.

ISTRUZIONI — Prezzi per mm. d'altezza (largh. una colonna): Necrologie L. 15. Pubblicità Commerciale pagine di testo L. 15; * pag. fronte Retroscrittive L. 10; ultima L. 10. Finanziaria L. 15. Echi di Cronaca, di Spettacoli e di Cronaca Sportiva L. 40 la riga. Echi finanziari L. 50 la riga. Cite, viaggi L. 40 la riga. Matrimoni, Nascite e Onorificenze L. 50 la riga. Lauree, diploma, ecc. L. 40 la riga. Pagam. anticipato. Teste govern. in più. L'Amministr. del Corriere si riserva il diritto di rifiutare quegli ordini che a suo giudizio insindacabile ritenesse di non poter accettare.

Le leggi per la difesa della razza approvate dal Consiglio dei ministri

I matrimoni misti sono proibiti - La definizione di «ebreo», le discriminazioni e l'annotazione allo Stato Civile - L'esclusione dagli impieghi statali, parastatali e di interesse pubblico - Le norme concernenti le scuole elementari e medie e gli insegnanti

Roma 10 novembre — Il Consiglio dei ministri è tornato a discutere la riforma dell'istruzione superiore. Il ministro dell'Interno, Antonio Palazzi Viminale, sotto la presidenza del ministro della Pubblica Istruzione, ha parlato della riforma dell'istruzione superiore con l'intervento del ministro della Pubblica Istruzione, Giuseppe De Rita.

FOLLOWING A VERY STRONG ANTI-SEMITIC CAMPAIGN, IN 1938 THE **RACIAL LAWS** WERE PROMULGATED AND THE JEWISH POPULATIONS WAS SUBJECTED TO A SERIES OF DISCRIMINATORY LAWS, SUCH AS FORBIDDING MARRIAGE BETWEEN ARYAN AND JEWISH CITIZENS, DEPRIVING THE RIGHT TO EXERCISE A PROFESSION AND ATTENDING PUBLIC SCHOOLS ...THIS WOULD INCREASE MY **PRIDE** IN BEING JEWISH.

BY THE END OF THE YEAR, ALL
THOSE WHO BELONGED TO THE
'JEWISH RACE' WERE FORCED TO
END THEIR RESEARCH STUDIES.

THE RESULTS OF RESEARCH STUDIES THAT I WAS CONDUCTING WITH FABIO VISINTINI, AN ASSISTANT IN TURIN'S CLINIC FOR NERVOUS AND MENTAL DISEASES, ON THE ACTIVITY OF THE NERVOUS CENTERS OF CHICK EMBRYOS FROM THE VERY FIRST DAYS OF THEIR DEVELOPMENT TO LATER PERIODS OF ONTOGENESIS, WERE REJECTED BY ITALIAN SCIENTIFIC JOURNALS. OUR RESULTS WERE PUBLISHED A YEAR LATER BY A SWISS JOURNAL.

I ACCEPTED **PROFESSOR
LARUELLE'S** INVITATION TO
WORK IN **BRUSSELS.**

A MOST APPEALING INVITATION BECAUSE PROFESSOR LEVI HAD ALSO RECENTLY MOVED TO THE *UNIVERSITY OF LIÈGE*.

I MOVED TO BRUSSELS IN MARCH
1939.

ON THE WEEKENDS I WOULD VISIT
PROFESSOR LEVI IN LIÈGE.

COME IN
RITA, I SAW YOU
COMING FROM THE
WINDOW.

THANK YOU
PROFESSOR



BEFORE GETTING TO WORK WOULD YOU LIKE A CHICORY COFFEE?

GOOD HEAVENS! NO, THANK YOU.



I CAN NEVER GET USED TO THE TASTE OF CHICORY COFFEE. EVERYONE LOVES IT SO MUCH THAT IT IS WRITTEN ON THE WALLS!

THOSE ARE SECRET CODES.



WHAT?

THOSE WRITINGS ON THE WALLS ARE SECRET MESSAGES FROM GERMAN SPIES.



LEVI HAD SET UP A SMALL CELL CULTURE LABORATORY AND WAS VERY HAPPY WHEN I VISITED.

THEY WERE HAPPY MOMENTS AND WE HAD NO IDEA OF WHAT WOULD HAPPEN IN A FEW MONTHS TIME.



IN SEPTEMBER WHILE I WAS AT A CONFERENCE IN SWEDEN THE NEWS THAT WOULD CHANGE EVERYTHING ARRIVED. I DECIDED TO RETURN TO BELGIUM AND LATER IN DECEMBER RETURNED TO ITALY.

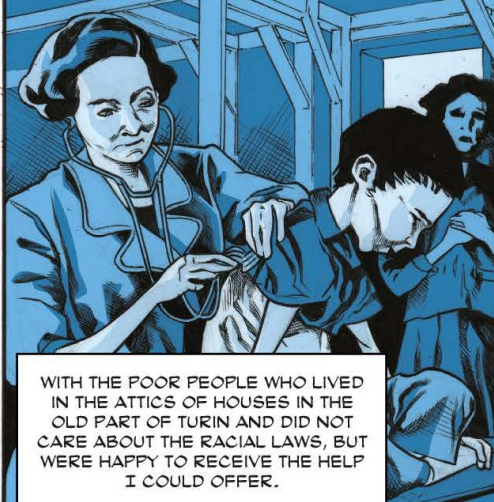
I'M SORRY TO INTERRUPT, BUT TERRIBLE NEWS HAS JUST ARRIVED.

AFTER THE INVASION OF POLAND BY GERMAN CHANCELLOR ADOLF HITLER TWO DAYS AGO... FRANCE AND GREAT BRITAIN HAVE DECLARED WAR ON THE GERMAN REICH!

I RETURNED TO ITALY IN 1940 AND WAS HAPPY TO BE REUNITED WITH MY LOVED ONES. BUT, AT THE SAME TIME, I REALIZED THAT IT WOULD BE IMPOSSIBLE FOR ME TO RESUME MY RESEARCH ACTIVITY.



I DECIDED TO PRACTICE MEDICINE CLANDESTINELY.



WITH THE POOR PEOPLE WHO LIVED IN THE ATTICS OF HOUSES IN THE OLD PART OF TURIN AND DID NOT CARE ABOUT THE RACIAL LAWS, BUT WERE HAPPY TO RECEIVE THE HELP I COULD OFFER.

I WILL FIND AN ARYAN DOCTOR WHO CAN SIGN A PRESCRIPTION FOR ME, BUT MAKE SURE YOUR SON TAKES THE MEDICINE THAT I WILL BRING YOU...



YES, DOCTOR, GOD BLESS YOU.



THE MANY CONSTRAINTS I WAS FACED WITH FORCED ME TO REDUCE AND THEN ABANDON THIS ACTIVITY.

ON 10 JUNE 1940 THE LOUDSPEAKERS IN THE STREETS WERE HEARD.



FIGHTING MEN OF THE ARMY, OF THE SEA AND OF THE AIR. BLACKSHIRTS OF THE REVOLUTION AND OF THE LEGIONS...

ATTENTION! A FATEFUL HOUR IS STRIKING IN THE SKY OF OUR FATHERLAND. THE HOUR OF IRREVOCABLE DECISIONS. A DECLARATION OF WAR HAS ALREADY BEEN PRESENTED TO THE AMBASSADORS OF GREAT BRITAIN AND FRANCE.



RITA DID YOU HEAR THAT?

WHAT MADNESS!



WHAT DO WE DO NOW? RITA, WE ARE AT WAR...

MOTHER...



LIFE IN TURIN DURING THE FIRST YEAR OF THE WAR CONTINUED WITHOUT GREAT CHANGES, BUT THE PESSIMISM AND FEELING OF UNCERTAINTY WERE STRONGLY FELT.

I WAS UNABLE TO CARRY OUT ANY TYPE OF ACTIVITY. I WAS IN A VEGETATIVE STATE, FALLING INTO DEPRESSION.



AND SO?

...



THIS WAS THE STATE I WAS IN WHEN **RODOLFO AMPRINO** CAME TO VISIT ME IN THE FALL.

ONE DOESN'T LOSE HEART IN THE FACE OF DIFFICULTIES.

I...



REMEMBER THAT IN THE MIDDLE OF THE LAST CENTURY RAMÓN Y CAJAL, IN THE SLEEPY CITY OF VALENCIA, IN A POORLY EQUIPPED INSTITUTE, CARRIED OUT THE FUNDAMENTAL WORK THAT ESTABLISHED THE BASIS OF ALL WE KNOW ABOUT THE NERVOUS SYSTEM OF VERTEBRATES.



YOU SHOULD SET UP A SMALL LABORATORY AND RESUME YOUR INTERRUPTED RE-SEARCH.

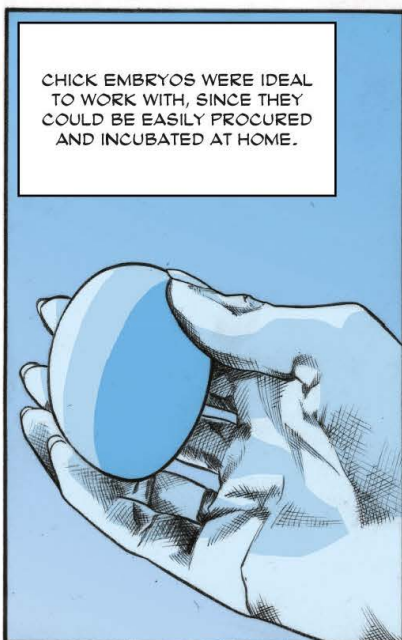


AT THAT MOMENT RODOLFO, WITH WHOM I DID NOT HAVE A CLOSE RELATIONSHIP, SEEMED LIKE ULYSSES WHEN HE ENCOURAGED HIS FELLOW VOYAGERS NOT TO LOSE HEART BUT TO CONTINUE ON THEIR COURSE TOWARD THE UNKNOWN.

HE COULD NOT HAVE SOWN HIS SUGGESTION ON MORE FERTILE GROUND.



MOTHER, GINO AND PAOLA RATHER THAN RISK ANOTHER SEPARATION, HELPED ME WITH MY PROJECT.



CHICK EMBRYOS WERE IDEAL TO WORK WITH, SINCE THEY COULD BE EASILY PROCURED AND INCUBATED AT HOME.



DO YOU THINK IT COULD WORK?

THE SMALL THERMOSTAT THAT YOU HAVE FOUND CAN SERVE AS AN INCUBATOR.

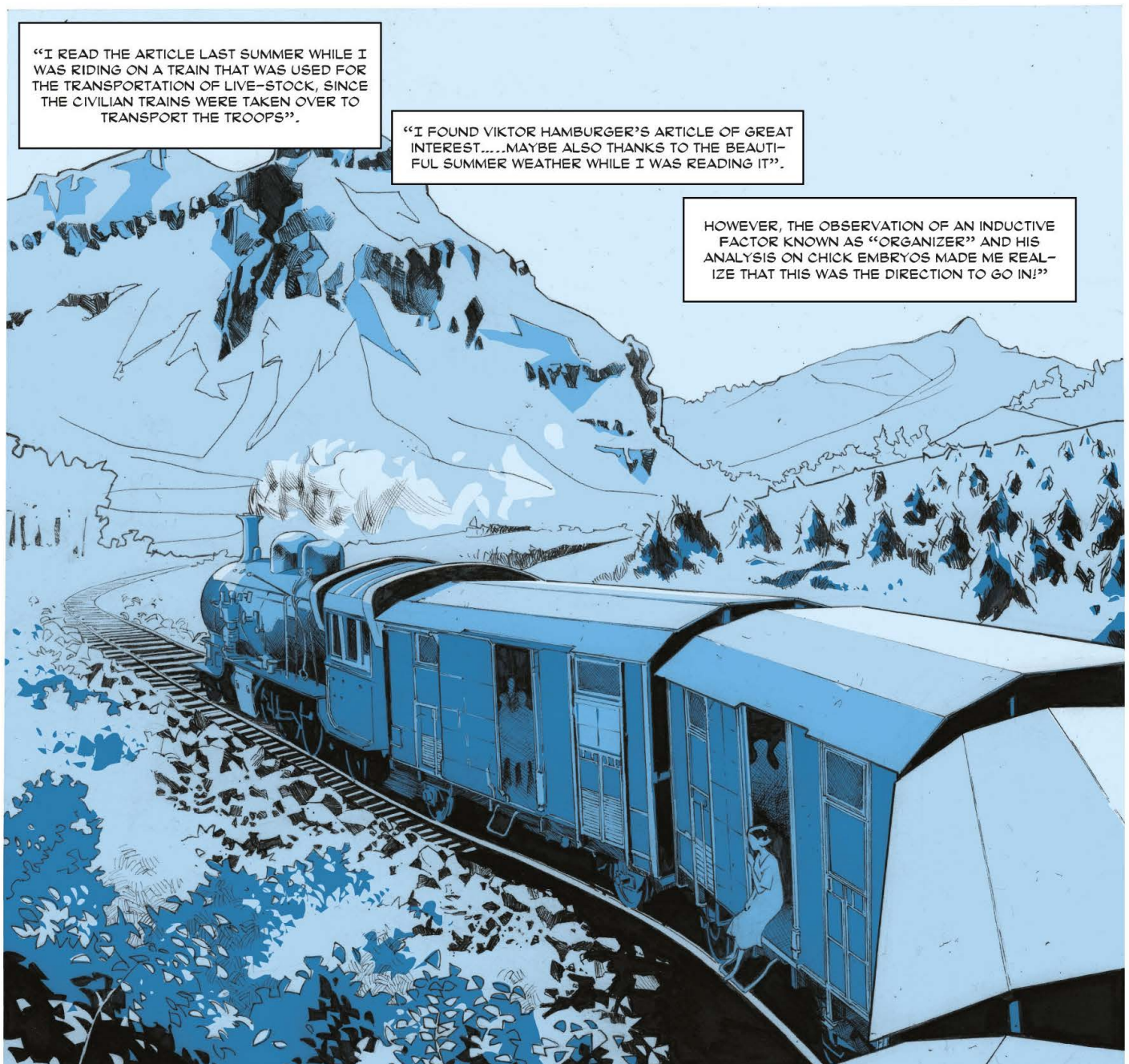


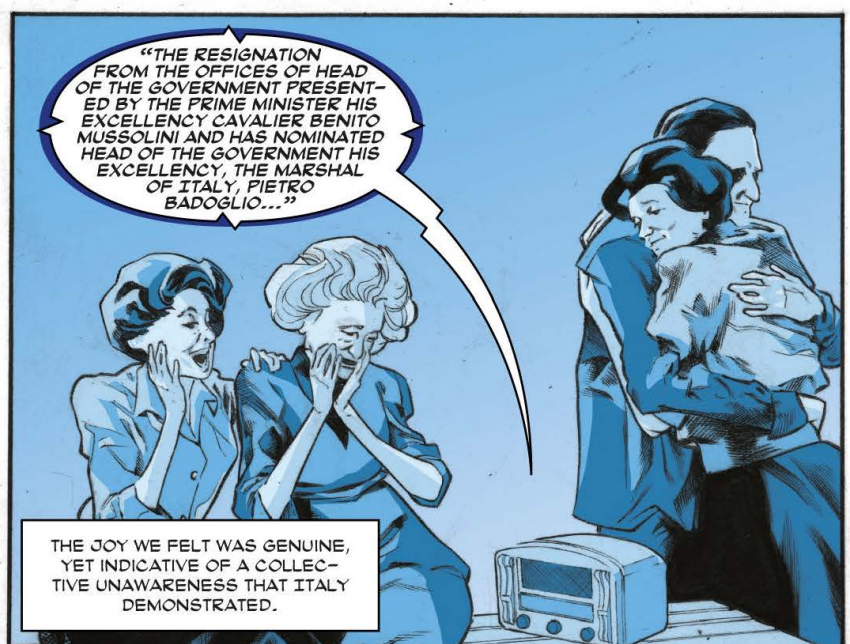
THE MOST EXPENSIVE ITEMS WERE A **STEREOMICROSCOPE** AND A **BINOCULAR ZEISS MICROSCOPE** WITH ALL THE EYEPieces AND PHOTOGRAPHIC APPARATUS.



MY ROOM, ONE THIRD OCCUPIED BY MY BED, HAD BEEN TRANSFORMED INTO A LABORATORY.

AND DEAR OLD PROFESSOR LEVI IN THE SUMMER OF 1941, UPON HIS RETURN HOME AFTER A DANGEROUS TRIP FROM BELGIUM, JOINED ME IN MY RESEARCH PROJECT AND WE WORKED TOGETHER IN MY BEDROOM-LABORATORY.





IN FACT, AFTER THE 8TH OF SEPTEMBER, FOLLOWING THE ALLIANCE WITH THE ANGLO-AMERICANS, THE GERMAN TROOPS SWEEPED THROUGH THE PLAIN AND AFTER NUMEROUS DARING ATTEMPTS, WE SOUGHT REFUGE IN FLORENCE.

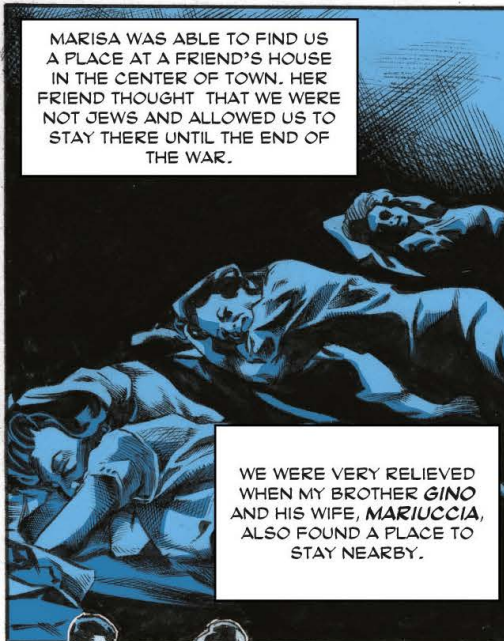


PAOLA I AM SO HAPPY YOU ARE SAFE AND SOUND!

MARISA, ARE YOU SURE THIS DOES NOT CAUSE PROBLEMS FOR YOU?

NO, DON'T WORRY. I WILL TAKE YOU TO A SAFE PLACE.

MARISA WAS ABLE TO FIND US A PLACE AT A FRIEND'S HOUSE IN THE CENTER OF TOWN. HER FRIEND THOUGHT THAT WE WERE NOT JEWS AND ALLOWED US TO STAY THERE UNTIL THE END OF THE WAR.



WE WERE VERY RELIEVED WHEN MY BROTHER GINO AND HIS WIFE, MARIUCCIA, ALSO FOUND A PLACE TO STAY NEARBY.

IN SEPTEMBER 1944, OUR RELIEF WAS TRANSFORMED INTO JUBILATION.



THE BRITISH MARCHED ALONG THE CROWDED STREETS.



THE NIGHTMARE OF THE NAZI MONSTER DISAPPEARED FROM TUSCANY, BUT THE WAR CONTINUED IN THE NORTH.

MY MEDICAL DEGREE GAVE ME THE RIGHT TO HAVE THE **RED CROSS** BADGE THAT ALLOWED ME, AS A DOCTOR, TO CIRCULATE DURING CURFEW.



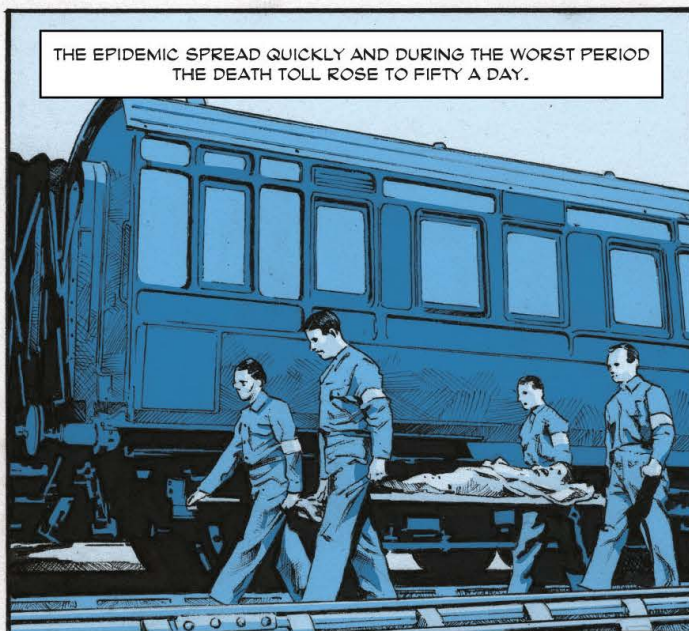
I WAS ASSIGNED TO THE HEALTH UNIT IN A CAMP FOR DIS-PLACED PEOPLE ON THE OUTSKIRTS OF TOWN.



DOING THE WORK OF A NURSE RATHER THAN A DOCTOR, IN LATE WINTER I NOTICED A GROWING NUMBER OF REFUGEES WITH DIGESTIVE PROBLEMS, WHICH SOON REVEALED TO BE **TYPHUS**.



THE EPIDEMIC SPREAD QUICKLY AND DURING THE WORST PERIOD THE DEATH TOLL ROSE TO FIFTY A DAY.



I HAD CHOSEN THE MEDICAL PROFESSION BECAUSE I ADMIRER **ALBERT SCHWEITZER**.

BUT, DURING MY SHORT MEDICAL EXPERIENCE, BEFORE THE RACIAL LAWS REMOVED ME FROM THE HOSPITAL WARDS...

I NEVER EXPERIENCED SUCH A DRAMATIC AND HEARTBREAKING SITUATION.



THIS EXPERIENCE INFLUENCED MY DECISION TO ABANDON THE MEDICAL PROFESSION.

I REALIZED I DID NOT POSSESS THE DETACHMENT THAT DOCTORS MUST HAVE TO CARE FOR SUFFERING PATIENTS.

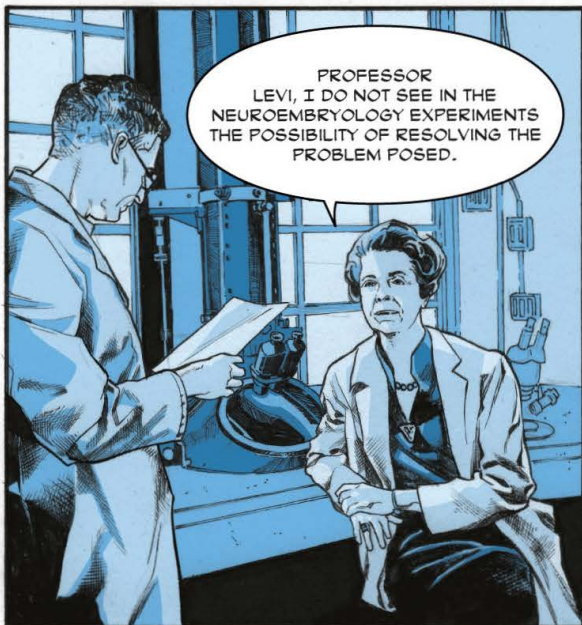
TOWARD THE MIDDLE OF MAY
I RETURNED TO THE NORTH
AND TWO MONTHS LATER I
WAS FINALLY IN TURIN!

THE SITUATION HAD
RADICALLY CHANGED.

PROFESSOR LEVI ASKED ME TO
REASSUME THE POSITION I HELD
BEFORE THE RACIAL LAWS.



PROFESSOR
LEVI, I DO NOT SEE IN THE
NEUROEMBRYOLOGY EXPERIMENTS
THE POSSIBILITY OF RESOLVING THE
PROBLEM POSED.

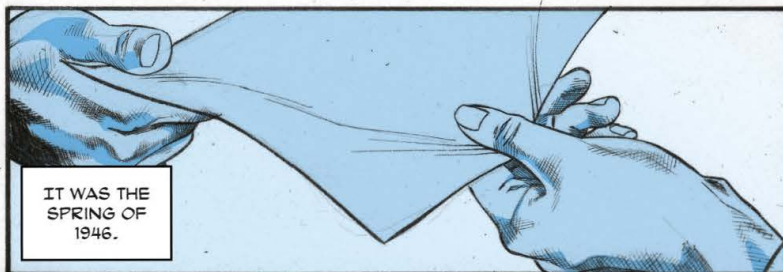


I DID NOT CALL YOU
FOR THAT RITA... I KNOW THAT YOU
HAVE ALREADY REJECTED IT AND
DO NOT WANT TO INSIST.

READ THIS LETTER
PLEASE.



IT WAS THE
SPRING OF
1946.



PROFESSOR
HAMBURGER
WANTS ME IN
ST. LOUIS?

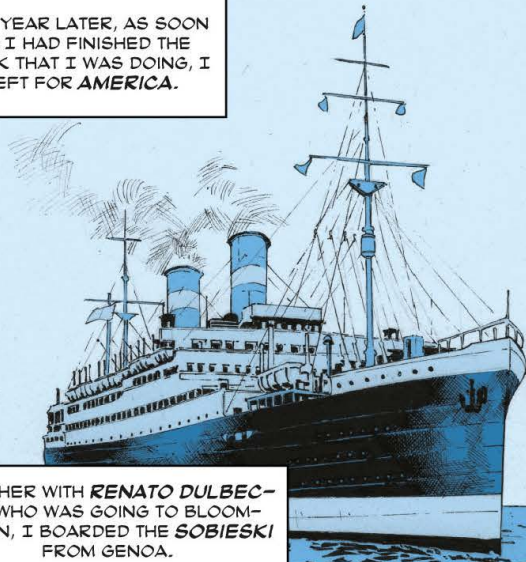
YES. HE WAS
VERY INTERESTED IN THE
RESULTS PUBLISHED IN THE
BELGIAN JOURNAL THAT
WERE SO DIFFERENT
FROM HIS.

L'ARCHIVE
DE BIOLOGIE.

THAT
ONE.

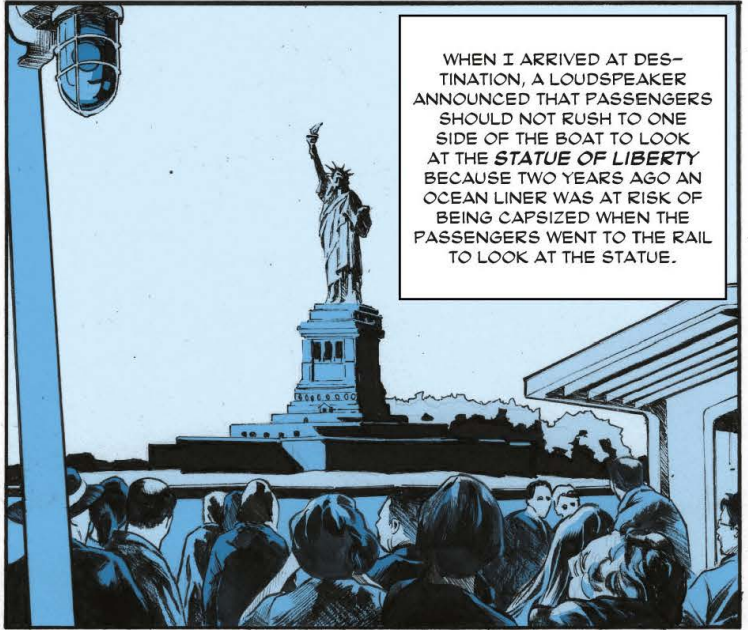


ONE YEAR LATER, AS SOON AS I HAD FINISHED THE WORK THAT I WAS DOING, I LEFT FOR AMERICA.



TOGETHER WITH **RENATO DULBEC-CO**, WHO WAS GOING TO BLOOMINGTON, I BOARDED THE **SOBIESKI** FROM GENOA.

WHEN I ARRIVED AT DESTINATION, A LOUDSPEAKER ANNOUNCED THAT PASSENGERS SHOULD NOT RUSH TO ONE SIDE OF THE BOAT TO LOOK AT THE **STATUE OF LIBERTY** BECAUSE TWO YEARS AGO AN OCEAN LINER WAS AT RISK OF BEING CAPSIZED WHEN THE PASSENGERS WENT TO THE RAIL TO LOOK AT THE STATUE.



FROM NEW YORK I LEFT FOR THE **MIDWEST** ON A TRAIN THAT, UNLIKE THE CATTLE CARS ON WHICH I TRAVELLED DURING THE WAR, SEEMED THE MOST LUXURIOUS TRAIN I HAD EVER RIDDEN ON.



BUT, IT ALSO BROUGHT BACK TO MIND THE TRAIN ON WHICH I HAD DEVELOPED THE IDEA OF REPEATING HAMBURGER'S EXPERIMENTS.

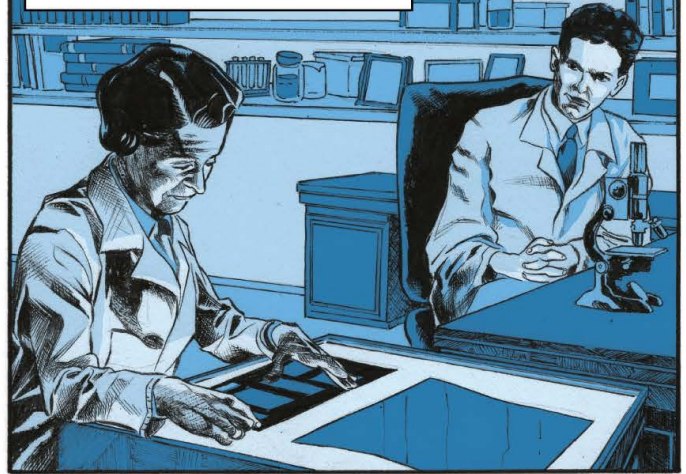
I FINALLY ARRIVED AT **WASHINGTON UNIVERSITY** IN ST. LOUIS, WHERE VIKTOR HAMBURGER WAS WAITING FOR ME TO START A NEW CHAPTER IN MY LIFE.



THE **REBSTOCK BUILDING**, WHICH HOUSED THE ZOOLOGY INSTITUTE, WOULD BECOME MY WORK PLACE FOR MANY YEARS TO COME – NOT FOR ONLY A SEMESTER AS I HAD PLANNED.



WORKING WITH HAMBURGER WAS PLEASANT AND STIMULATING, EVEN IF I WAS PESSIMISTIC ABOUT MY RESEARCH.



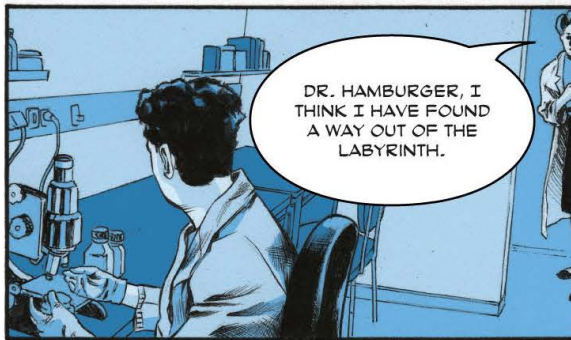
ONE AFTERNOON IN LATE AUTUMN OF 1947 I BECAME OPTIMISTIC, AFTER OBSERVING A SERIES OF **SILVER IMPREGNATED CHICK-EMBRYO SECTIONS**.



I DEDUCED THAT THE NERVOUS SYSTEM, DURING EMBRYONIC DEVELOPMENT, DEFINES THE DIFFERENT FUNCTIONS CARRIED OUT BY NERVE CELLS, ELIMINATING THE UNNECESSARY CELLS IN EXCESS AND REASSIGNING FUNCTIONS TO THE REMAINING ONES.



DR. HAMBURGER, I THINK I HAVE FOUND A WAY OUT OF THE LABYRINTH.



VIKTOR AGREED THAT MY OBSERVATIONS COULD BE THE KEY THAT HAD LONG BEEN IGNORED.



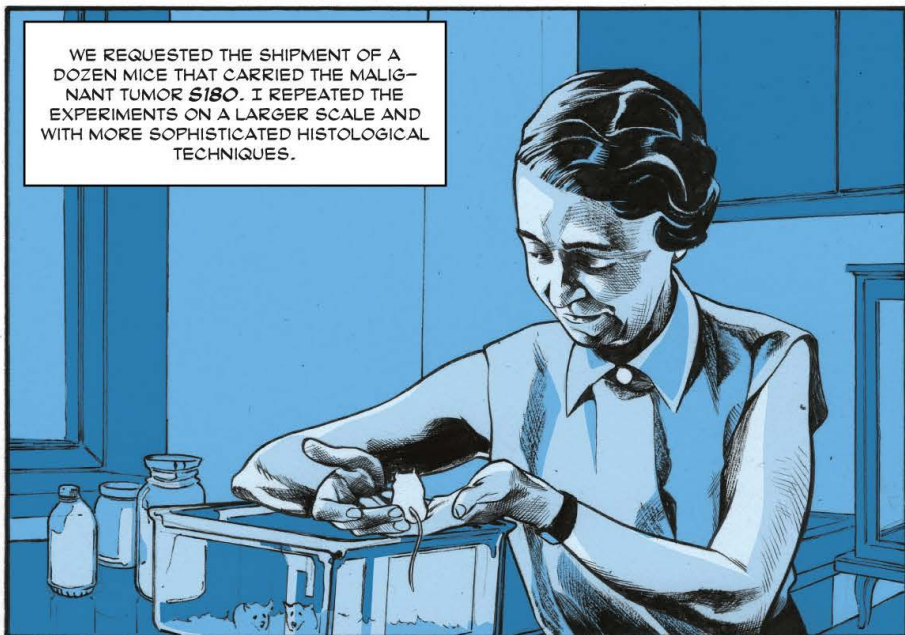
Mamma,
sento nell'aria un odore
quanto mai stimolante di
tartufi. Ho fiducia nel mio
olfatto e penso di essere
sulle tracce di qualche
grosso esemplare

I REMAINED IN ST. LOUIS FOR THREE MORE YEARS AND WROTE QUITE FREQUENTLY TO MY MOTHER TO KEEP HER UPDATED ON MY RESEARCH.

I LATER WORKED ON THE IDEA OF RE-PEATING THE EXPERIMENTS CONDUCTED BY **ELMER BUEKER**, WHICH GRAFTED MOUSE TUMORS IN CHICK EMBRYOS.



WE REQUESTED THE SHIPMENT OF A DOZEN MICE THAT CARRIED THE MALIGNANT TUMOR **S180**. I REPEATED THE EXPERIMENTS ON A LARGER SCALE AND WITH MORE SOPHISTICATED HISTOLOGICAL TECHNIQUES.



IN 1951 I PRESENTED MY FINDINGS AT A CONFERENCE HELD AT THE NEW YORK ACADEMY OF SCIENCES.

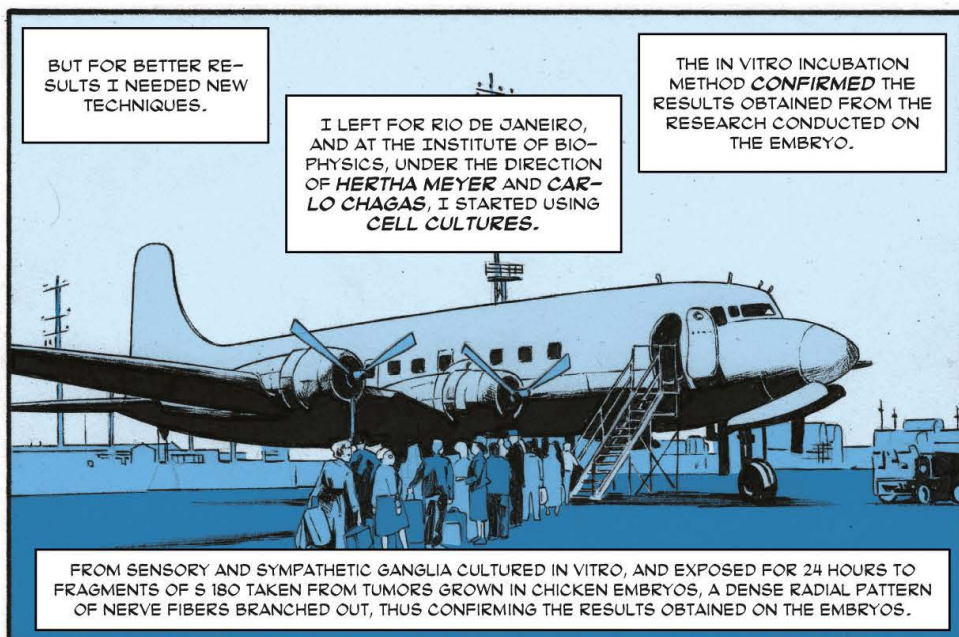


I HAD WORKED A GREAT DEAL ON THE STUDIES AND OBTAINED SOME RESULTS AND, DESPITE THE TREPIDATION PERVAING THE CONFERENCE HALL, I WAS CONGRATULATED BY THE MOST IMPORTANT PERSONALITIES PRESENT, SUCH AS **PAUL WEISS**.

BUT FOR BETTER RESULTS I NEEDED NEW TECHNIQUES.

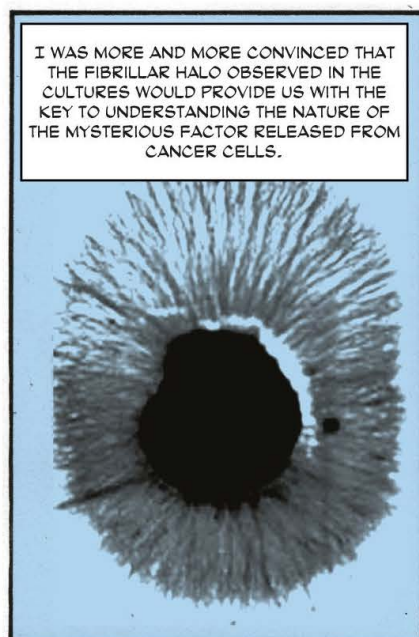
I LEFT FOR RIO DE JANEIRO, AND AT THE INSTITUTE OF BIO-PHYSICS, UNDER THE DIRECTION OF **HERTHA MEYER** AND **CARLO CHAGAS**, I STARTED USING CELL CULTURES.

THE IN VITRO INCUBATION METHOD **CONFIRMED** THE RESULTS OBTAINED FROM THE RESEARCH CONDUCTED ON THE EMBRYO.



FROM SENSORY AND SYMPATHETIC GANGLIA CULTURED IN VITRO, AND EXPOSED FOR 24 HOURS TO FRAGMENTS OF **S 180** TAKEN FROM TUMORS GROWN IN CHICKEN EMBRYOS, A DENSE RADIAL PATTERN OF NERVE FIBERS BRANCHED OUT, THUS CONFIRMING THE RESULTS OBTAINED ON THE EMBRYOS.

I WAS MORE AND MORE CONVINCED THAT THE FIBRILLAR HALO OBSERVED IN THE CULTURES WOULD PROVIDE US WITH THE KEY TO UNDERSTANDING THE NATURE OF THE MYSTERIOUS FACTOR RELEASED FROM CANCER CELLS.



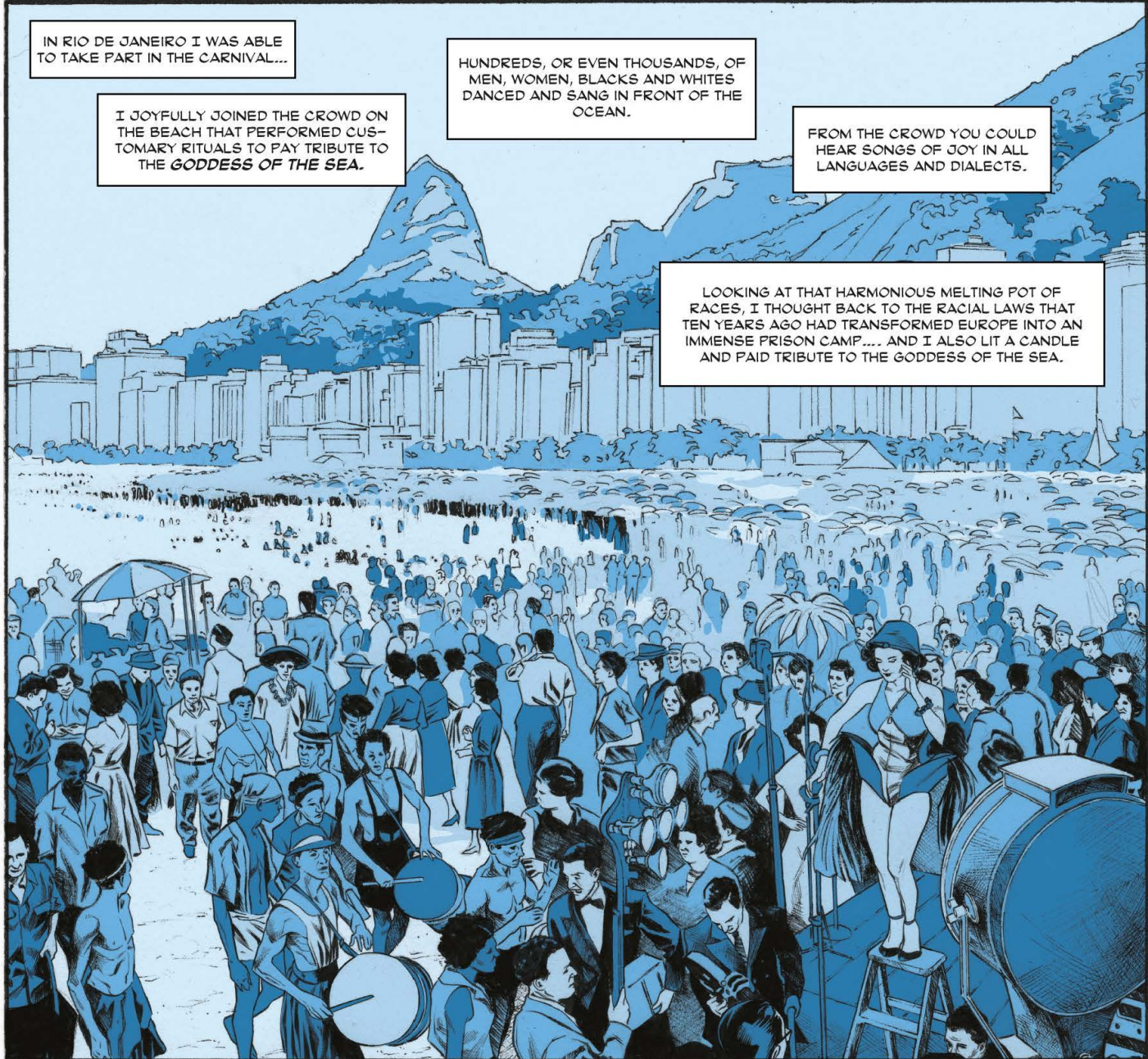
IN RIO DE JANEIRO I WAS ABLE TO TAKE PART IN THE CARNIVAL...

I JOYFULLY JOINED THE CROWD ON THE BEACH THAT PERFORMED CUSTOMARY RITUALS TO PAY TRIBUTE TO THE *GODDESS OF THE SEA*.

HUNDREDS, OR EVEN THOUSANDS, OF MEN, WOMEN, BLACKS AND WHITES DANCED AND SANG IN FRONT OF THE OCEAN.

FROM THE CROWD YOU COULD HEAR SONGS OF JOY IN ALL LANGUAGES AND DIALECTS.

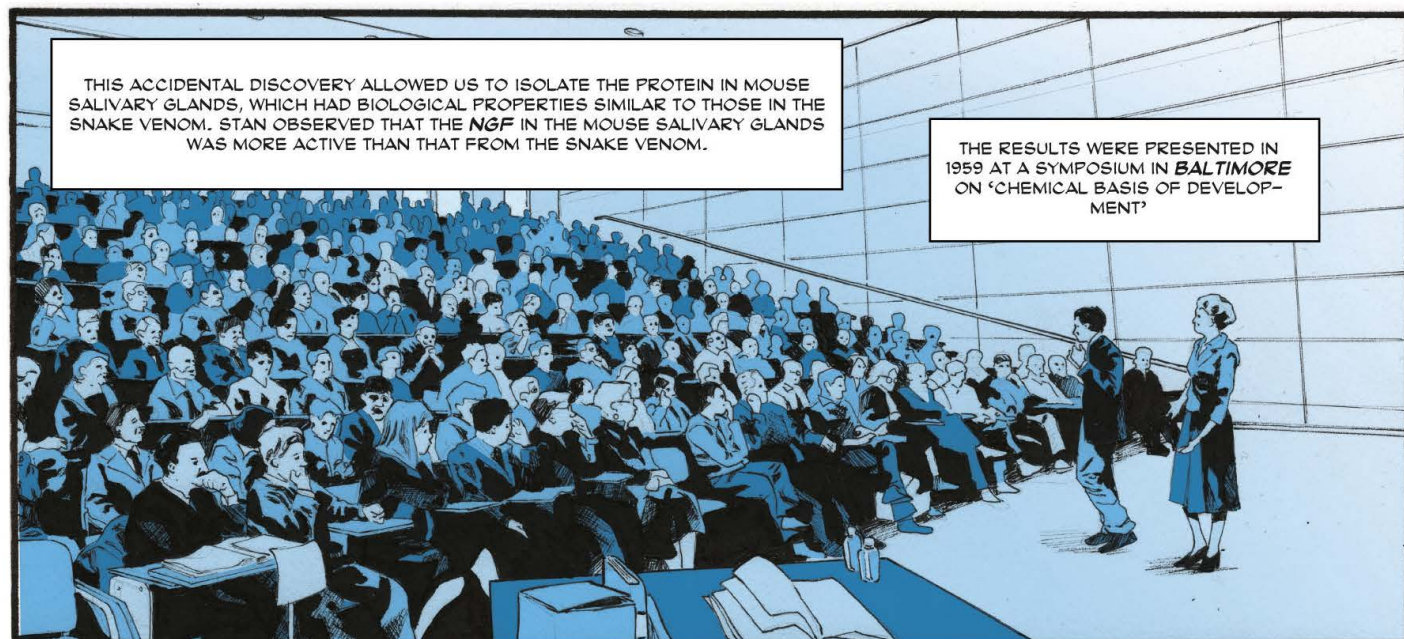
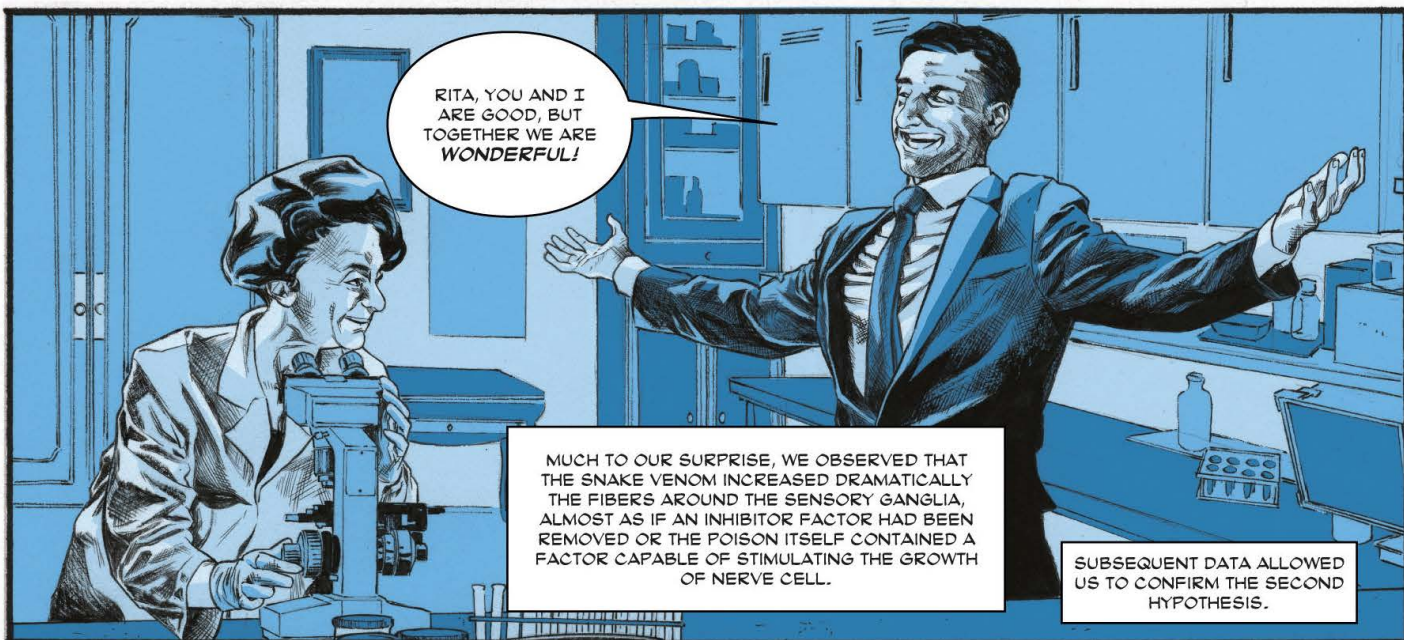
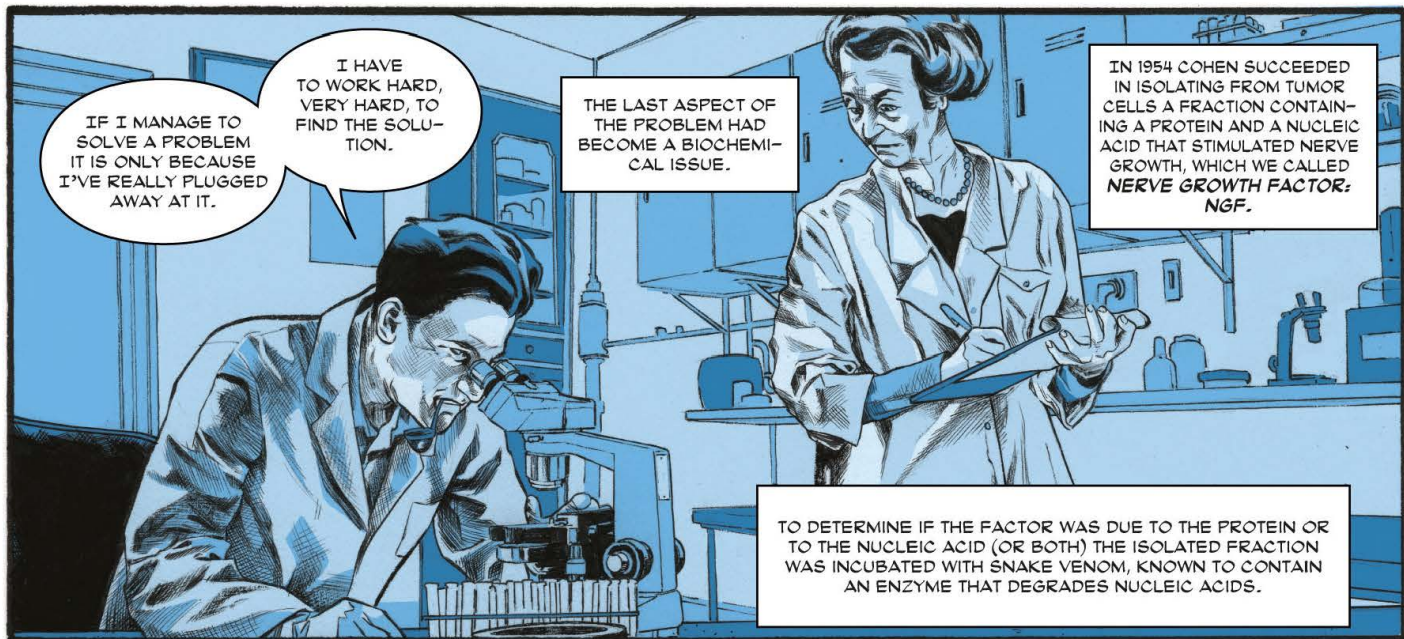
LOOKING AT THAT HARMONIOUS MELTING POT OF RACES, I THOUGHT BACK TO THE RACIAL LAWS THAT TEN YEARS AGO HAD TRANSFORMED EUROPE INTO AN IMMENSE PRISON CAMP.... AND I ALSO LIT A CANDLE AND PAID TRIBUTE TO THE GODDESS OF THE SEA.



WHEN I RETURNED TO ST. LOUIS IN JANUARY 1953, HAMBURGER INTRODUCED ME TO **STANLEY COHEN**, A YOUNG BIOCHEMIST WHO WOULD JOIN OUR TEAM AND HELP US IDENTIFY THE FACTOR RELEASED BY MOUSE SARCOMAS.



I WAS IMMEDIATELY STRUCK BY STAN'S ABSORBED EXPRESSION, TOTAL DISREGARD FOR APPEARANCES AND HIS MODESTY.



I HAD FINALLY FOUND
WHAT I HAD BEEN
SEARCHING FOR SO LONG.

I HAD DISCOVERED THE
NGF...BUT I CONTINUED TO
WORK ON ITS DEVELOPMENT
AND IMPROVEMENT FOR AT
LEAST SIX MORE YEARS.

BEFORE RETURNING TO
ITALY IN 1961.



IN ROME I SET UP A RESEARCH
UNIT AT THE *ISTITUTO SUPERIORE
DI SANITÀ*. THUS I BEGAN MY LIFE
AS A COMMUTER BETWEEN THE TWO
CONTINENTS.



PROFESSOR *MARINI BETTOLO* GAVE US TWO
ROOMS IN HIS LABORATORY AND WITHIN THREE
MONTHS I HAD AT MY DISPOSAL A RESEARCH
UNIT LARGER THAN THE ONE I HAD IN THE
UNITED STATES.



THE *LABORATORY OF
CELL BIOLOGY* WAS
SOON ESTABLISHED AND I
WAS ENTRUSTED WITH ITS
DIRECTORSHIP.

WHILE THE PRIMARY STRUCTURE OF THE
NERVE GROWTH FACTOR WAS DETERMINED
IN 1971, THE *NGF* GENE WAS IDENTIFIED TWELVE
YEARS LATER BY TWO TEAMS OF POSTGRADU-
ATES IN THE UNITED STATES.



I SAW PROFESSOR
LEVI FOR THE LAST
TIME IN 1965.

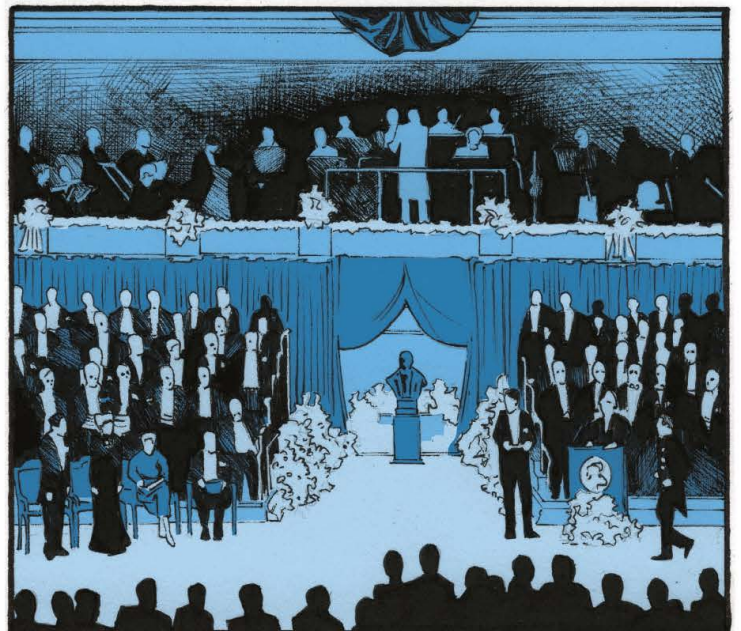
I HAVE A
CARCINOMA OF
THE STOMACH. I DIAG-
NOSED IT MYSELF.

I HAVE
TWO WEEKS TO
LIVE.

TELL ME ABOUT
YOUR WORK.

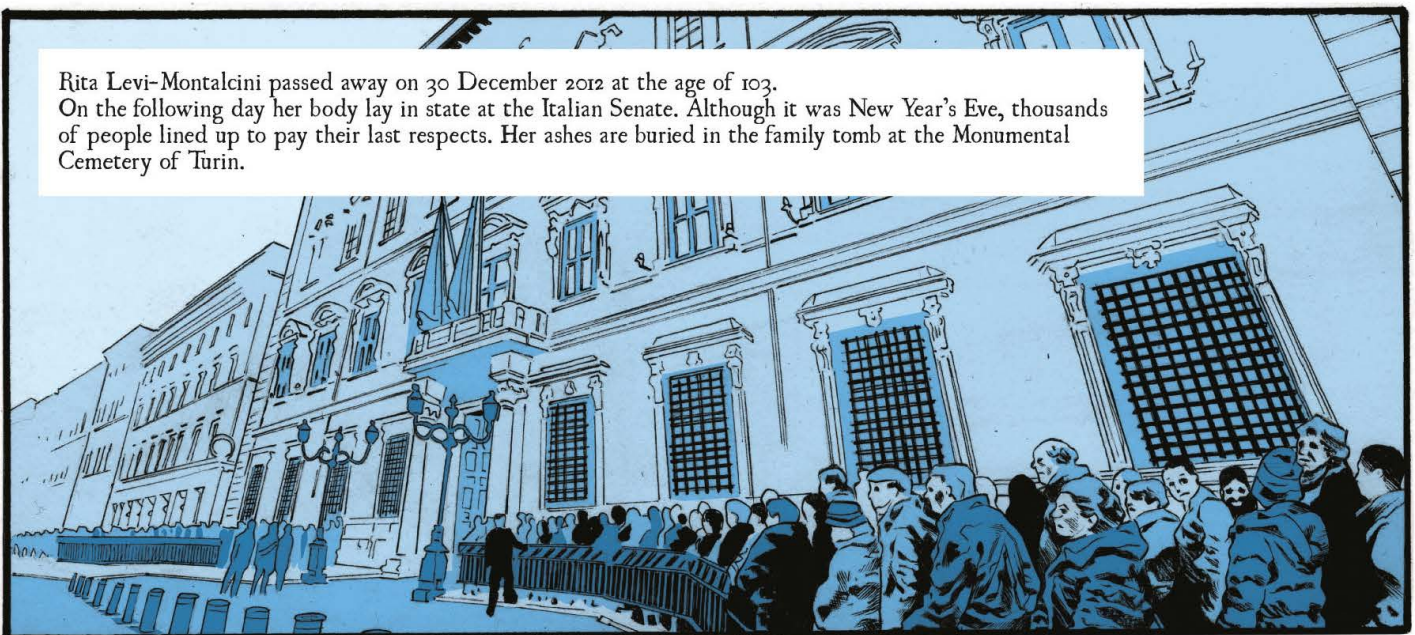
I WAS IMPRESSED BY THE LUCIDITY OF MY 'MAES-
TRO' AND FRIEND, MAINTAINING TILL THE VERY END
AN INTEREST IN RESEARCH AS AN INSTRUMENT OF
UNDERSTANDING AND NOT AS AN OBJECT OF COM-
PETITION AND AN INSTRUMENT OF POWER.

WITHOUT HIM I WOULD NEVER HAVE
REACHED MY GOALS.

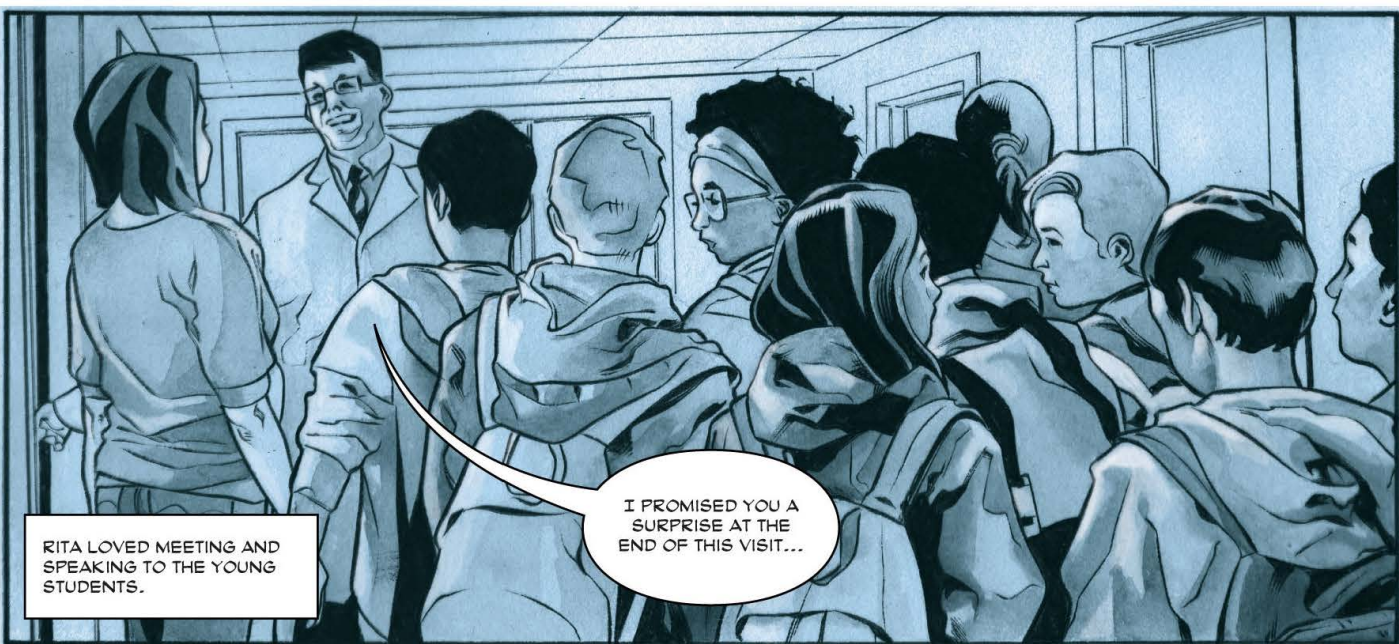




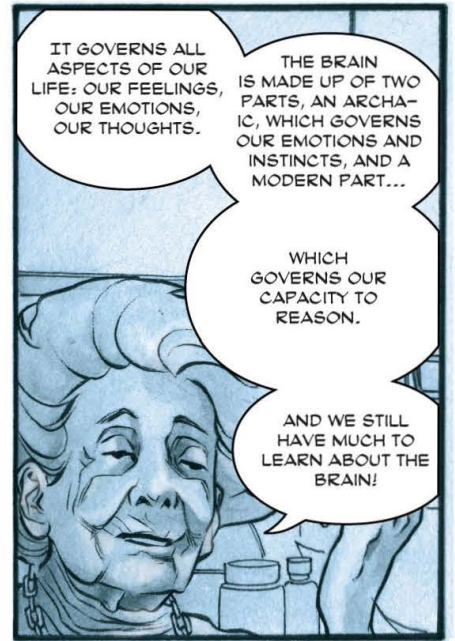
In 1986 Rita Levi-Montalcini was awarded the Nobel Prize in Physiology or Medicine. The Prize motivation stated: 'The discovery of the Nerve Growth Factor (NGF) in the beginning of the 1950s is a fascinating example of how a skilled observer can create a concept out of apparent chaos. Until this time, experimental neurobiologists did not understand how the development of the nervous system was regulated to result in the final complete innervation of the body.'

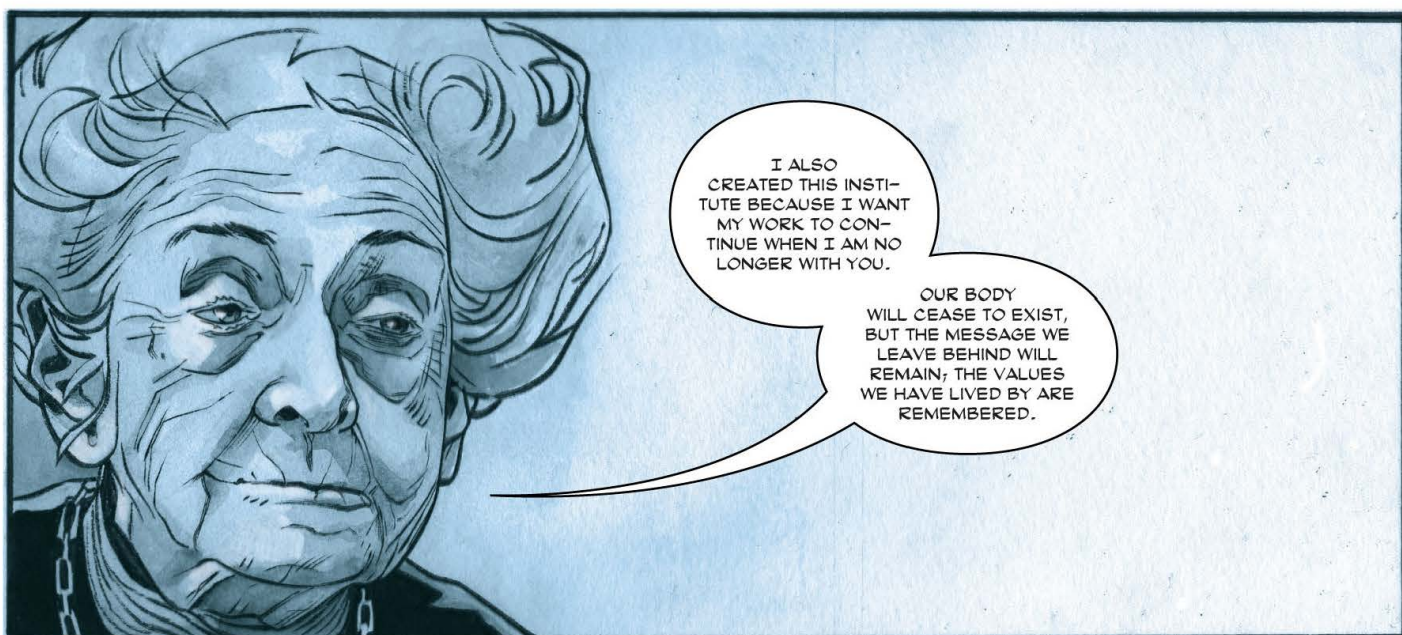


IN 2005 RITA LEVI-MONTALCINI ESTABLISHED THE EUROPEAN BRAIN RESEARCH INSTITUTE (EBRI). PROFESSOR LEVI-MONTALCINI WENT EVERYDAY TO THE INSTITUTE TO COORDINATE THE ACTIVITIES OF HER RESEARCH GROUP.









'THE ABSENCE OF COMPLEXES, A REMARKABLE TENACITY IN FOLLOWING THE PATH I BELIEVE TO BE RIGHT, AND A WAY OF UNDERESTIMATING THE OBSTACLES STANDING BETWEEN ME AND WHAT I WANT TO ACCOMPLISH - TRAITS I BELIEVE I INHERITED FROM MY FATHER - HAVE HELPED ME ENORMOUSLY IN FACING THE DIFFICULT YEARS OF LIFE.'

WHAT SHOULD I SAY TO MY FRIENDS WHEN THEY ASK ABOUT MY RELIGION?

WHAT SHOULD YOU SAY?

YOU TELL THEM THAT YOU ARE A FREETHINKER.

END



**Accademia di Comics,
Creatività ed Arti visive**

Manfredi Toraldo

Known as Manf, he is a writer, a letterist, a graphic artist and an art director. Author of the fantasy comics 2700 (Lo Scarabeo), Halloween School (GES), 3200 (FreeBooks), Escape from Auschwitz for "the train of memory" Sudan for "Cesar Onlus". He collaborates with 001 Edition, Walt Disney, Andamar, Renoir, Lo Scarabeo, Sergio Bonelli Publisher on the serie Nathan Never. He is the founder and the editor of Manfont Editions, art director of Allagalla editions and writer of children's stories.

Francesco Mobili

Born in the '91, in Castelfidardo (Ancona), has been a student of ACCA Academy, he has collaborated to the comics "Darkwing n.0", Pino Rinaldi's Agency X & Omega compendium "(Cagliostro press), Rats n.1, The Professor (ERREDI).

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