“What can I know? What should I do? What may I hope for? What is man?”

Immanuel Kant (1724–1804)
German Philosopher

Donating Your Body for Plastination
Dear Sir or Madam,

You are interested in the possibility of donating your body for plastination, a method that makes it possible to preserve natural anatomical specimens permanently for the purposes of research and instruction. The demand for this type of human specimens has remained constant. While, on the one hand, they are absolutely necessary for training physicians and for keeping physicians’ skills up-to-date, they can, on the other hand, be used to educate the public on general medical issues—which cannot be said of traditionally preserved specimens. This is why I have set up a body donation programme for plastination.

I invented plastination in 1977 at the Anatomical Institute of the University of Heidelberg, where I worked for 20 years as a physician and anatomist. Since that time I have made it my life’s work to continue developing these procedures and techniques, and have been awarded a number of patents for my efforts. In order to be better able to do justice to this ambition, I established the Institute for Plastination (IfP) in 1993, which I now run as Scientific Director. Dr. med. Angelina Whalley is a licensed physician and the Institute’s Managing Director.

This brochure contains the important information that you will need if you are thinking about donating your body for plastination. You will learn, for instance, what will be done with your body after death. In addition, we will explain the plastination process to you—a process that is part of a centuries-long tradition of preserving and dissecting anatomical specimens. This brochure will introduce the ethical and moral issues involved and will provide information both on the work and objectives of the IfP and on current and future research endeavors. Finally, this brochure will also provide detailed instructions for donating your body for plastination and will show you how to obtain additional information.

Dr. med. Gunther von Hagens, Physician, Anatomist, Plastinator
Visiting Professor at the NYU College of Dentistry, New York, USA

Dr. med. Angelina Whalley
Managing Director
# 1. Preservation and Anatomy – Traditions and the Future

“Anatomical dissection gives the human spirit the opportunity to compare the dead with the living, the disassociated with the whole, the destroyed with the nascent, and opens up the profundity of nature to us more than any other effort and observation.”

*Johann Wolfgang von Goethe*  
*German Poet (1749–1832)*

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Postscript by Gunther von Hagens:  
Ensuring the Future of IfP’s Body-Donor Program  
Appendix  
Dr. Gunther von Hagens, Curriculum Vitae  
Literature
Leonardo da Vinci performed private studies in which he dissected human bodies. These formed the basis for his detailed, life-like, anatomical drawings. He thus made a significant contribution to social acceptance of the study of the human body.

Transience and Immortalization

Reverence in the face of death is a significant hallmark of all cultures, as evidenced by burial rites in which the deceased are often laid out prior to burial or cremation. For the survivors, graves and cemeteries are places of intense reflection, which offer the opportunity both to keep the memory of the deceased alive as well as to say goodbye before the body succumbs to decomposition and becomes an object of alienation and revulsion. It follows that ancestral burial rites are also rooted in issues of hygiene. A decomposing body poses the risk of infection and contamination for survivors.

Human transience, however, is countered by a need as old as humanity itself: the longing to protect one’s own body and those of loved ones from decomposition, or at least to slow down the process, has been present in all human civilizations since time immemorial. As a result, the first great achievements of civilization brought with them methods that attempted to immortalize the bodies of the departed—at least in the cases of important individuals.

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The mummies of ancient Egyptian pharaohs and dignitaries, admittedly, are nothing more than mortal shells that have been dismembered, treated with fragrant resins such as myrrh, and that have shrunk as a result of having dried out. Very little of the life and death of the deceased is still recognizable, which was intended to be beneficial for the trip to the other world. The failed organs that resulted in the individual’s death, for instance, were entombed separately in vessels known as canopic jars.

Reverence and Insight

Religion and ideology impeded the study of human anatomy for many centuries. The casual acceptance of killing (wars, witch hunts, the death penalty) and the ban on dissecting corpses stood in striking contradiction to one another. On the one hand, killing was accepted and legalized by society, whereas opening up and thoroughly studying the dead for the benefit of the living was inconceivable. Anatomists had to limit themselves to studying the anatomy of animals, especially dogs and monkeys. Even Hippocrates (460-375 BC) and Aristotle (384-322 BC) obtained their knowledge of anatomy by dissecting animals. Attempting to extrapolate the results to humans, however, resulted in a number of mistakes.

Ever since one of the most significant physicians of antiquity, Galen (c. 129-199 AD), treated wounded gladiators in his home town of Pergamon and then began treating Emperors Marcus Aurelius and Commodus, the art of medicine took a fundamental shift away from a mythical, symbolic understanding of the human body to an analytical approach. The eye for analytical study which physicians of antiquity, Galen (c. 129-199 AD), treated wounded gladiators in his home town of Pergamon and then began treating Emperors Marcus Aurelius and Commodus, the art of medicine took a fundamental shift away from a mythical, symbolic understanding of the human body to an analytical approach. The eye for analytical study which emphasized knowledge over piety, first developed in western civilization—this only happened gradually, however, as the West became more oriented towards scientific inquiry. As a telling aspect of this transformation, the late Middle Ages saw the first great achievements of civilization brought with them methods that attempted to immortalize the bodies of the departed—at least in the cases of important individuals.

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anatomy, known as “anatomical theaters,” for the benefit of medical scholars and interested laypersons were another way in which Vesalius broke a taboo. Using these experiences as a basis, he wrote his monumental work, “De fabrica humani corporis”—the first complete textbook of human anatomy—pointing out significant weaknesses and errors in Galen's teachings which until that time had remained unchallenged since the 2nd century AD.

Science and Art

The dissection theaters of the day were more than mere academic lecture halls. Heavily influenced both by humanism and by the aesthetics of the Renaissance, these presentations of medical scholarship had a deeply felt impact on humanity's understanding of ourselves, of nature, and of our world. They also served to inspire the arts. More than a few anatomical drawings from this period show artistically dissected bodies in natural, life-like poses and set in landscapes; anatomists gathered in a circle around an opened body became a significant variation on the group portrait theme in painting. Typical examples include “Anatomy Lesson of Dr. Joan Deyman” and “Anatomy Lesson of Dr. Nicolaas Tulp” by Dutch painter Rembrandt Harmenszoon van Rijn (1606-1669), created in 1628 and 1632, respectively.

French anatomist Honoré Fragonard (1732-1799) took a slightly different perspective, performing dissections in the service of traditional art and transforming his own anatomical specimens into enduring works of art. His numerous dissection projects made him something of a sculptor of dead bodies. Fragonard also wanted to extend the guiding principle of the Enlightenment to include the workings of the human body. He wanted to present the body in a way that was vivid, insightful, and, above all, beautiful. For him, anatomy was not just a sub-science of medicine, but was instead its aesthetic culmination. In order to prevent his specimens from deteriorating, Fragonard injected them with colored wax which solidified in the blood vessels; the remaining tissue dried out and was treated with lacquer.

A particularly stunning work that he created in this way is his “The Rider of the Apocalypse.” (see page 8) which can still be seen along with his other works at his former workshop in Alfort near Paris. (Info: Ecole Nationale Vétérinaire d’Alfort, 7, Avenue du Général de Gaulle, 94704 Maisons-Alfort, France; Tel.: +33 (0) 1-43967172, www.vet-alfort.fr)

The creation of the first slices of the human body dates back to the nineteenth century, when renowned anatomist Nikolas Pirogoff published “Anatomia topographica, sectionibus per corpus humanum”—a volume still informative to this day—featuring 213 drawings of slices of the human body, including one of a pregnant woman. The stone printing blocks are still in existence.
During an anatomy lesson, the cadaver does indeed experience a marvelous transformation: whereas an obtuse respect for putrefaction once sentenced it to decay in darkness, the daring gesture that forcibly brings it to the light of day has turned it into a luminous figure of truth—science now burrows its way through the territory that once merely filled the bellies of maggots.

Michel Foucault
French Philosopher (1926–1984)
The Plastination Process

Even though a major German encyclopedia (the 19th edition of the Brockhaus Encyclopædia, 1992) indicates that the word “plastination” is derived from the Greek (from plassein = to shape, to form), the term is, in fact, a creation of Gunther von Hagens. He coined the term because “plastification” already had a fixed meaning in the field of polymer chemistry, and the expression used in the original patents of 1977/78 (“Polymer Impregnation of Perishable, Biological Specimens”) was not terribly catchy and utterly inadequate for popularizing the new technology, particularly abroad. The following paragraphs will provide an explanation of how plastination works. We will first present the process in a general, comprehensible manner; for those with an interest, we will then go into more detail regarding the chemical processes used.

A process at the interface of the medical discipline of anatomy and modern polymer chemistry, plastination makes it possible to preserve individual tissues and organs that have been removed from the body of the deceased as well as the entire body itself. Like most inventions, plastination is simple in theory: in order to make a specimen permanent, decomposition must be halted. Decomposition is a natural process triggered initially by cell enzymes released after death and later completed when the body is colonized by putrefaction bacteria and other microorganisms. By removing water and fats from the tissue and replacing these with polymers, the plastination process deprives bacteria of what they need to survive. However, bodily fluids cannot be replaced directly with polymers, because the two are chemically incompatible. Gunther von Hagens found a way around this problem: In the initial fluid-exchange step, water in the tissues (which comprises approximately 70% of the human body) and fatty tissues are replaced with acetone, a solvent that readily evaporates. In the second step, the acetone is replaced with a polymer solution. The trick that first proved to be critical for pulling the liquid polymer into each and every cell is what he calls “forced vacuum impregnation.” A specimen is placed in a vacuum chamber and the pressure is reduced to the point where the solvent boils. The acetone is suctioned out of the tissue at the moment it vaporizes, and the resulting vacuum in the specimen causes the polymer solution to permeate the tissue. This exchange process is allowed to continue until all of the tissue has been completely saturated—while a matter of only a few days for thin slices, this step can take weeks for whole bodies. The second trick is selecting the right polymer. For this purpose, “reactive polymers” are used, i.e., polymers that cure (polymerize) under specific conditions such as the presence of light, heat, or certain gases. Their viscosity must be low,

Fluids in Tissues

- Embalming: Decomposition is stopped using formaldehyde.

Dissection
- Posed specimens are dissected with forceps and scalpels.

Sawing
- Bodies are cut in 3.5 mm slices while frozen.

Fluid Removal
- Frozen bodily fluids are replaced by acetone in a cold acetone bath.

Fat Removal
- Soluble fat molecules are replaced by acetone in a warm acetone bath.

Forced Impregnation
- In a vacuum, acetone is extracted and gradually replaced with plastic.

Positioning
- Each structure is brought into the proper position.

Casting Slices
- Slices of tissue are laid between sheets of film and/or glass plates.

Gas Curing
- Infused Specimen

Heat Curing
- Plastinated Slices

Solid Plastic

- Infused with silicon rubber.

Liquid Plastic

- Infused with epoxy resin.

Plastinated Brain Slice. The plastic used provides an excellent definition between gray and white brain matter.

The centerpiece of plastination: “forced impregnation.” In a vacuum, acetone trickles out of the tissue, creating a volume deficit in the specimen which allows it to be permeated by the plastic.
Specimens plastinated with silicone are cured with a special gas.

i.e., they have to be very thin liquids; they must be able to resist yellowing; and, of course, they must be compatible with human tissue. The polymer selected determines the look and feel of the finished specimen.

Special Technical Subtleties

What makes plastination complicated is the large number of variations that have become possible since the invention of this process and that are essential for obtaining the best results. Indeed, these variations represent the very strengths of the process. A large number of factors needs to be taken into consideration: crucial among these is the degree of decomposition, the list also includes the distribution of fatty tissue and the amount of blood in the veins. As a result, each individual specimen requires its own unique, tailor-made procedure if it is to be preserved properly, even small, microscopic bundles of cells retain their original form. The result is a visually arresting plastinate—the ideal teaching discipline within the field of medicine, it is based on the dismemberment of the dead and concerned with the form, composition, and structure of the human body up to and including the most intricate details of its tissues, functions, and prenatal development.

Considered in this light, plastination does not differ from traditional anatomy in any way. As an innovative preservation method, it does, however, make it possible to create completely new types of specimens. When the polymers harden, for instance, muscles that would ordinarily be slack can provide support, allowing the body to be displayed in a variety of unusual poses, either in its entirety or in various stages of anatomical dissection. It is even possible to take a body that has been dissected down “to the bones and ligaments. Sometimes plastinates even communicate more than untreated anatomical specimens. Transparent slices of tissue, for example, allow observers to trace the course of even the most minute nerves into the depths of the body. The gray matter visible in slices of the brain is easier to distinguish from the white medulla oblongata than is the case with a fresh organ. When the physical/Chemical process is performed properly, even small, microscopic bundles of cells retain their original form. The result is a visually arresting plastinate—the ideal method for displaying a preserved body in a way that sheds light on the functions of its structures.

Craftsmanship or Showmanship?

The unlimited shelf life of plastinates makes worthwhile highly detailed dissection work that would have been too time-consuming prior to the invention of the process. After it has been saturated with silicone rubber but before it can be cured, for example, a whole-body plastinate can first be posed as desired, needles and pieces of foam rubber are used to hold nerves and muscles in place that have been cut away from their natural positions. In addition to tremendous manual dexterity, this also requires a great deal of knowledge in a variety of areas. The individual preparing the specimen must be familiar with the opportunities afforded by process engineering and by the fields of chemistry involved. He or she must also have an excellent memory for, and ability to visualize, anatomical structures as well as years of experience with dissection and a talent for the job. Above all, preparing a whole-body plastinate is an intellectual and sculptural achievement that requires the plastinator to have a mental picture of the results before even beginning the project. Viewed from this perspective, creating a plastinate can be compared to the work of an artist who sculpts a figure from a block of stone or who prepares a clay mold for a cast-bronze statue. However, the critical difference is that the purpose of creating a permanent anatomical specimen is not to achieve a perfect shape with a beautiful appearance. The objective is instead to use forceps, scalpel, and often the vision visors (magnifiers) used by watchmakers in order to highlight those details of a pre-
existing, natural organism that best illuminate the relationships between structures and their functions within a living body. If this process is executed with meticulous dissection and preservation work, the body is transformed into a replica of a life that has been lived that captures the authentic nature of that life. Presenting bodily functions in this way sometimes requires positions that reflect certain themes. The traditional pose of the reflective chess player, for example, is ideal for illustrating the nervous system, whereas a dancer would lend itself well to showing a particularly powerful female foot. The resulting novel postures have led these bodies to be referred to as “posed plastinates.” Of course, it is true that their postures differ from specimens preserved according to traditional anatomical practice, but this is a necessary consequence and not the aim of this integrated “reconstructive anatomy” which aims to recreate the living body. The poses of these specimens can have a disturbing effect on experts and laypersons alike—after all, the bodies and body parts on display have been reconnected to the living environment from which they originated. What is new is that a body rescued in this way from decomposition not only fails to instill revulsion in those who see it, but is instead perceived as something beautiful. Sometimes this perception is so overwhelming that observers may well forget the frailty of the human body, which the specimen so clearly demonstrates. It would be surprising if this did not produce an emotional storm in need of intellectual and spiritual processing. However, if the shock of the experience immediately triggers feelings of either hostility and aggression or unbridled enthusiasm, we can rest assured that these are only extreme responses that reflect very different natures and world views.

Our civilization is so advanced that we live in what is essentially an environment of our own creation, i.e., an artificial world. Consequently, it is all too understandable that we are increasingly inclined to repress our natural side. For many people, their bodies are little more than machines that the doctor is supposed to fix whenever there is any technical difficulty or failure. Even such vital organs as the kidneys, heart, and liver can now be replaced with healthy donor tissue as soon as severe damage sets in. Ever since this possibility has existed, discourse on the subject has been essentially reduced to two problems: the practical issue of whether sufficient replacement parts are available and the ethical issue of determining how to establish the moment of the donor’s death so that surgeons can immediately begin removing the organs (assuming consent has been given). By displaying human specimens publicly, an exhibition like BODY WORLDS allows us to encounter what remains of our natural selves within the framework of our artificial environment. Specifically, when we look inside whole bodies and organs in which disease processes such as lung cancer or heart attacks have run their course, we also see both our physical frailty and the cavalier manner in which we often neglect our own bodies. As such, these plastinates can elevate our individual and collective health consciousness. Besides satisfying purely scientific interests for individuals willing to expose themselves to the experience, exhibits such as these can also act as vivid and, most importantly, as intellectual and spiritual bridges to our own bodies. Furthermore, they can also provide profound and moving insight into our own physical nature.

3. The Institute for Plastination (IfP)

“That man can be conscious of himself in his contemplation raises him infinitely above all other living creatures on Earth.”

Immanuel Kant, German Philosopher (1724-1804)
Mission and Objectives
Gunther von Hagens found it necessary to establish the Institute for Plastination (IfP) in 1993 because the space and technical facilities available at the University of Heidelberg were no longer adequate for the growing demands of plastination. At the IfP in Heidelberg, the techniques for preparing whole-body plastinates and transparent slices of whole bodies were perfected. The complexity and work involved in preparing these specimens far exceeds the capacity of most interested institutes. Preparing a technically correct, whole-body plastinate does, after all, require 1,000 to 1,500 man-hours.

The aim of the IfP is to produce human specimens and make them available both for basic and continuing medical training as well as for the general medical education of the public. The specimens are prepared solely for this purpose and are not to be sold to private individuals or dealers. Preparing a technically correct, whole-body plastinate does, after all, require 1,000 to 1,500 man-hours.

The objectives of the IfP can be summarized as follows:

1. Improving overall anatomical instruction
   The IfP produces high-quality educational specimens for anatomical instruction at universities and other teaching institutions.

2. Improving awareness of medical issues, particularly among the general public
   The IfP produces plastinates aimed at educating non-medical professionals and restores public access to the anatomy of the human body.

3. Popularizing and developing plastination techniques
   The IfP disseminates plastination expertise around the world, allowing other teaching institutions to profit from this unique process. The IfP also pursues scientific objectives and strives continually to develop and refine the techniques of plastination and the resulting anatomical specimens. It is aided in these endeavors by visiting scientists and scholarship holders from national and international universities.

There are now more than 400 plastination laboratories in 40 countries around the world using plastination to prepare specimens for academic study. Despite all of the progress made to date, the need for further research is immense. For example, tests need to be performed on new polymers that could be used to retain the color of tissues and to improve plastination results for specimens such as the eye, which are difficult to preserve. Every two years, participants at the International Plastination Conference have the opportunity of exhibiting the plastinates that they have produced. In addition, the International Society for Plastination and its publication The Journal of the International Society of Plastination provide additional forums for experts in the field to exchange information concerning advances in the scientific application of the process.

Current issues include how slice plastinates can be used to show complex systems such as the blood supply to the bones of the wrist or how to display sub-tile structures such as the muscles and nerves surrounding the prostate. These tissues are critical for proper sexual functioning and understanding them is an extremely important means of obtaining precision when planning delicate surgical procedures.

The Body Donor Program of the IfP
The High Demand for Plastinated Specimens
Although the eminent importance of plastination for medical study has been acknowledged and there is a great deal of interest in the process, for years now the demand for high-quality plastinated specimens for instructional purposes has not been met. This is due to the following reasons:

1. Only a few academic establishments are in a position to set up their own plastination laboratories and to train and pay the staff needed to maintain such a facility. The nature and size of some academic institutions (such as nursing college and training centers for medical technicians and other medical professions) would not support such activities.

2. New technological developments in plastination mean that it is now possible to preserve entire bodies. Whole-body specimens are particularly valuable for anatomical study, because students can examine the body in its entirety, in the same way as they will later be examining and treating living bodies in their entirety. Consequently, the development of plastination has now been getting away from preserving small individual specimens to dissecting whole bodies. This process is technically extremely complex and is far beyond the scope of a university laboratory.

3. Theoretically, manufacturers of teaching aids could remedy this situation by producing plastinated specimens for anatomical study using the best equipment available. However, as the production of plastinated specimens involves major expenses, they could not be given away for free; they would have to be sold. No one would be prepared to do this in practice, as the sale of bodies or parts of bodies is a controversial issue in our society and is considered unethical or morally objectionable.

This situation not only applies to producing plastinated specimens, but to other urgently needed human specimens as well, despite the fact that their sale and purchase are not against the law in Germany and other Western countries. An important and understandable reason for the controversy surrounding this issue is due to the fact that the donors and their families are in a position to sell their bodies be sold after their deaths. There are neither laws which state that dead bodies must be left intact, nor are there any which do not allow parts of such bodies to be removed unless consent has been given. Consequently, there is a legal gray area which the tabloid press can always interpret as something scandalous, accusing people of getting rich at the expense of the dead. The real question is whether such claims are fueled by a legitimate interest or by sensationalism, but this is not an issue for the scientific community to resolve. It is a problem for the respective media and their audiences.

There are many people who would like to donate their bodies to medical science after their deaths. One means of doing so is to work with the anatomical institutes of universities. However, such establishments are unable to pass on specimens to other academic institutions in the form of slice plastinates, as costs would be incurred for which they do not want to receive invoices if body donors have not agreed to a sale. In addition, “services” like these are technically not within the declared province of a university in most countries. This situation is particularly awkward, as anatomical institutes frequently have to turn down prospective body donors, because they already have more than enough bodies for their own instruction.

Helping to Meet the Need
There is a clear disparity between the number of potential body donors on the one hand and the shortage of preserved specimens (especially plastinated ones) on the other hand. As a result of this, many scientific projects and academic efforts are doomed to failure. The body donor program of the IfP is working toward correcting this situation. To date, Gunther von Hagens has created body donor programs for plastination in Heidelberg, Kyrgyzstan, the Peoples’ Republic of China, and North America. The IfP has made a concerted effort to sensitize other countries to body donor programs, and has also attempted to establish such programs concretely using an approach of gradual change marked by mutual trust and cooperation. The success of this work as well as the resulting benefits to medical science and education are equally dependent on...
your decision to become a body donor. Success hinges on people like you who are generous enough to donate their bodies to the future progress of medical science.

**Handling Dead Bodies and Specimens**

**Plastination Institutes and Cooperation Partners**

In its endeavors to improve anatomical studies and research, the IfP is supported by numerous organizations which were founded for this purpose. Gunther von Hagens serves as scientific director. There are also cooperative efforts with official state-certified anatomical institutes.

**Financial and Legal Issues**

The IfP is a private research institute that does not receive any public funding or state subsidies. Due to the high costs of plastination development and production, the IfP can thus only provide specimens for a fee. The understandable proviso that the IfP can thus only provide specimens for plastination work, plastination development and production, does not receive any public funding or institution, and plastination as well as financing cover the costs of preservation, dissection, and plastination as well as financing the cost of new developments in plastination. On an international level, the IfP aims at eliminating any legal or ethical reservations associated with the sale of human specimens by ensuring that all those involved are aware of the exact facts.

**Where do the specimens come from?**

The IfP obtains its anatomical specimens from the following sources:

1. From the body donor programs listed above.
2. From established morphological institutes, in particular those for anatomy and pathology.
3. By purchasing old anatomical collections from established institutions and museums.

Specimens that the IfP has obtained from cooperation partners (such as universities) or public museums stem from old institutional collections and from corpses that were turned over for anatomical purposes in accordance with the respective state laws. These are not corpses as defined by burial laws; instead, they are what is known as “permanent anatomical specimens.” They are distinguished from corpses as defined in burial laws by three things: they have been preserved in a durable fashion; they are intended for the purposes of anatomical studies, instruction, and education; and they remain anonymous.

In most countries throughout the world, the practice of turning unclaimed bodies over to anatomical institutes is commonly accepted and is often regulated by legislation. To cite one example, it has been determined by law that unclaimed bodies in the state of Maryland (US) must be submitted to the State Anatomy Board in Baltimore. There they are preserved and then sent to interested anatomical institutes for a fee. In Russia, comparable regulations on procuring bodies go back to decrees enacted by Czar Peter I and thus correspond to the sense of tradition of the Russian people. In Germany, the practice of passing along unclaimed bodies for medical purposes was common until the mid-1980s. It has diminished, however, because of the constant number of people who have donated their bodies to science.

The problematic definition of what constitutes a corpse is addressed in detail in Gunther von Hagens’ work entitled “Grim and Gruesome Corpses, Posed Plastinates and Mandatory Burial,” which can be found online at www.bodyworlds.com, under the section “media.”

**Who Receives the Specimens?**

The IfP passes specimens along to certain institutions. The recipients of these specimens are as follows:

1. Institutions of higher learning and museums receive specimens that come from all of the IfP’s sources in accordance with the agreements that have been made.

**Measures for Science and Medical Research**

Various measures and projects are used in pursuing the IfP’s goals. These can be grouped into the fields of science and research and general medical education. To further its goals in science and research, the IfP implements the following measures:

1. Producing and supplying anatomical specimens exclusively to institutes engaged in anatomy, pathology, and forensic medicine at universities throughout the world.
2. Producing and supplying anatomical specimens for practice operations such as procedures on the temporal bone for ENT specialists in training.
3. Allocating body specimens for teaching and scientific projects for medical research establishments and medical engineering companies.
4. Producing and supplying traditional anatomical specimens fixed in formalin, plastinates, skeleton and vessel specimens for the purpose of training students.
5. Producing and supplying anatomical specimens to established natural science museums.
6. Producing our own specimens for teaching and scientific projects for medical research establishments and medical engineering companies.
7. Producing our own specimens for teaching and scientific projects for medical research establishments and medical engineering companies.
8. Producing our own specimens for teaching and scientific projects for medical research establishments and medical engineering companies.
my—individual organs, transparent vertical and horizontal slices of the body, and whole-body plastinates. The exhibition is structured in such a way that they can be shown simultaneously in different cities. The medium-term plans of the HP include creating additional exhibitions and establishing a museum about the body. BODY WORLDS focuses on approx. 200 authentic specimens of human anatomy—individual organs, transparent vertical and horizontal slices of the body, and whole-body plastinates. The exhibition is structured in such a way that visitors can experience it much as they would a three-dimensional textbook: anatomy as the foundation of the body is laid out in an educational and elucidating fashion. Visitors can envision how their own bodies are constructed as they walk through the exhibition, starting with the human skeleton and the way muscles are structured, on to the intestines and special specimens on the nerves and blood vessels, all the way to the way a baby develops in the uterus. There are also specimens that show the effects of diseases such as a heart attack or cancer.

The BODY WORLDS exhibition is intended to help educate people and provide the opportunity for lay people in particular to gain a greater understanding of the body and its functions. It is intended to help remind visitors of how natural our bodies are and create an impression of the unique character and anatomical beauty of the body's interior. The exhibition has been on constant display since 1995 and has been shown in Japan, Germany, Austria, Switzerland, Belgium, the UK, Korea, Singapore, Taiwan, the US, and Canada. To date, it has attracted over 20 million visitors, making it the most successful traveling exhibition of all times.

In spite of its great success and the high levels of acceptance that visitors have demonstrated, the controversial nature of BODY WORLDS continues to provoke debate in the European cities where the exhibition was shown. The topic has been the focus of a long and particularly heated dispute in Germany. Dr. Ernst-D. Lantermann, professor of personality and social psychology at the University of Kassel, developed an extensive representative survey of visitors and conducted his poll at many exhibitions with the goal of neutralizing the public debate. This was intended to create as objective a snapshot as possible of the visitors' expectations, motives, and impressions of the exhibition, and of how people planned to behave in the future as a result of seeing BODY WORLDS. The survey showed that hardly any other exhibition has met with such approval. A total of 60% of those who attended the exhibition stated that the authenticity of the specimens on display had a great impact on their understanding of the body, and more of 58% of them said that they found the specimens aesthetically stimulating. Only a minority (5% on average) said that they felt it violated human dignity to show...
such specimens of people’s bodies. After the exhibition, 88% of the visitors said that they now knew more about the human body, and more than 60% of them felt “more pensive about life and death.” Altogether, 79% expressed their wish to know more about life, death, and how the human body works? Death stimulates equal measures of revulsion and fascination in most people and in society as a whole. This could be one reason for the theory pro-

The general public, however, objected strongly, even though the event did not violate any legal guidelines, and Gunther von Hagens acted in absolute compliance with the law. He plans to conduct other events of similar nature in future.

The Human Museum - A Future Project of the Institute for Plastination

In every major city in the world there are countless museums that exhibit the products of human culture, sometimes featuring highly unusual themes. However, there is not a single museum about humans themselves—an institution that exhibits the anatomy of healthy and unhealthy human bodies in an aesthetically pleasing way using authentic specimens. The lungs, liver, kidneys, heart—the vital organs in our bodies without which we would die—are never made visible to the public. One reason for this is that before plastination was discovered, there were not any suitable exhibits that would have been able to present a realistic but aesthetic and authentic depiction of the human body without eliciting a sense of disgust and decay. Anatomical diagrams or models can only give an impression, in the same way that looking at a painting of a landscape or artifi-

The human body without eliciting a sense of disgust and decay. Anatomical diagrams or models can only give an impression, in the same way that looking at a painting of a landscape or artifi-

Public Autopsy, Gunther von Hagens, London 2002

*The Basketball Player,* Gunther von Hagens, photographed in Munich (Art Museum), 2003
Get used to the idea that Death should not matter to us, for good and evil are based on sensation. Death, however, is the cessation of all sensation. Hence, Death, ostensibly the most terrifying of all evils, has no meaning for us, for as long as we exist, Death will not be present. When Death comes, then we will no longer be in existence.

Epicurus (342-271 BC)
Greek Philosopher

4. Donating Bodies

posed by some medical experts that lay people should not be confronted with human specimens—it would be too macabre, too unethical. The counter-
argument to this reasoning would be that every year, thousands of students in medical professions work with cadavers to study human anatomy and are not traumatized by it.

For this reason, a long-term goal of the IfP is to establish a museum about the body at a permanent location.
Motivations and Thoughts of Body Donors

People want to be plastinated after their death for a number of reasons. The predominant desire is to serve medical research. The following is a small selection of quotations from talks and letters about becoming a body donor for plastination.

“I am fascinated by the thought of living on as a plastinate and being preserved for posterity—rather like the mummies in ancient Egypt. And it would not bother me if people at the exhibition touched my plastinated body, because I know how curious people are. Even the thought of traveling around as a plastinate is appealing—from exhibition to exhibition. From city to city. From country to country. From continent to continent! Or finding a new home in a museum. Or a university! The only thing that remains after death is a body that was a home for our souls, and they have moved on. And the body may not have been the best home for the soul anyway.”

“Both of my brothers died at a very early age. When I was a 14-year-old girl and watched as they were laid in a grave and buried, it was perfectly clear to me: ‘I don’t ever want to be buried! But there are not many other options. So when my little sister told me about your work, I said right away, ‘That’s it! That’s how you will be able to confront the thought of dying.’ Until then, the topic of death had been taboo for me ever since my two brothers had died. And when my mother decided to donate her body to your Institute as well and I saw your wonderful exhibition in Hamburg, I knew that it was time for me and my husband to make arrangements to get a donor identification card. Thank you.”

“The time has come for medicine to be accessible to a wider audience as well, and not only to doctors. We are all people with the same anatomical structures, and we all have the same right to understand our bodies.”

“I went to the exhibition in Hamburg. I was very moved by the exhibits, and I made a firm decision. I, too, want to be plastinated. The thought of being buried in the earth after my death is a horrible one as far as I’m concerned, because I am completely disgusted by worms and grow panicky when I think of them. Now I can relax about the issue, though, since I can stay above ground after my death and may even have a chance to “experience” trips (i.e. exhibitions) to many different places. As far as I’m concerned, the icing on the cake is the money you can save if you don’t have to be buried and maintain a plot for years and years.”

“I saw the exhibition in Berlin and came away with a different attitude about many issues involving the body. The perfect mechanism of the human body functioning should be given more attention and kept in better shape in terms of prevention and exercise, stress, relaxation, and disease. People who have health problems because of their own unhealthy choices (smoking, obesity) ought to have to pay more for their health insurance. In this day and age, every phase of development that the human body undergoes ought to be treated as a perfectly normal part of life that is equal to every other. There should not be any moralizing on the knowledge available to us about the ramifications and about death as the final phase. Family members should be accorded proper respect while they are still alive; it is difficult to keep up family burial plots after death.”

“Death is part of life, but it is still a taboo. Personally I have been thinking for quite some time about what ought to happen to my body when I’m gone. I never wanted a regular funeral. Unfortunately, there is little information to be found about alternatives. Right after I saw Gunther von Hagens on television, I decided to be plastinated. Both of my sons have accepted my decision wholeheartedly.”

How Can I Donate My Body for Plastination?

First of all, by giving your consent to donate your body for plastination, you are not signing any sort of contract, merely a declaration of intent. No fees must be paid for a body to be donated, and the donor will not receive any money.

There are a few steps that you can take to ensure that your body is donated for plastination after your death. You must make the following arrangements:

(1) Complete the “Donating Your Body for Plastination—Donor’s Consent” form in duplicate, sign both copies, and return them to us.

For better preservation results, educational and research purposes, it is helpful for the IFP to have details about prior health conditions, if any, are known and to have permission to access the health records of body donors after their death. If you agree to make these available, you will have to authorize the IFP accordingly in writing. Four your convenience, you may fill out and submit the Medical History Release Authorization form with your Donor Consent form.

(3) Have at least one of your family members or relatives sign the Donor Consent form. If they are not in favor of your body donation, then your signature must be witnessed by an attorney on both forms.

(4) We will countersign one of the forms and return it to you to confirm its receipt. You should file this with your personal documents or give it to a relative for safekeeping. You will also be given an identification card as a body donor.

Are There Conditions for Donating My Body?

A few conditions must be met for a donation, but there are not as many as you might think:

- The age of the body being donated does not matter. On the one hand, the shape of the organs does not vary much with age, and on the other hand, medical students will probably have to treat patients of all ages when they are qualified physicians.
- It is also possible to be a regular organ donor in addition to donating your body for plastination. Donating an organ can save lives and is therefore always given priority over donating a body.
- The presence of a disease is not generally detrimental to donating your body; after all, medical students must learn to recognize these conditions. The differences between organs from one body to the next are essential for proper


(1) The donor has to have died of natural causes. The following conditions must be fulfilled:

1. The donor to have died of natural causes.

2. The body must be largely intact, i.e., it cannot have been subjected to a postmortem examination for pathological or forensic reasons. The IFP is unable to accept bodies that have been severely disfigured as a result of an accident. If a fatal accident occurs and parts of the body are severed as a result, the body will have to undergo a post-mortem examination in any case. This is usually necessary to clarify issues relating to liability and insurance claims.

3. The body must have written consent from the donor (the form “Donating Your Body for Plastination – Donor Consent”) or, if applicable, a relative. There is no fee for donating your body. If the IFP receives a body from relatives or the authorities without having written consent from the deceased, the body can only be accepted if neither the deceased nor any relatives have voiced any objections.

4. By giving consent, a body donor also agrees that he or she will not be buried, as the whole body is used for plastination. If the body is not suitable for plastination, as all of the organs and parts of the body, whether healthy or diseased, are important for medical training. The remains that are not required such as connective tissue, parts of the skin, and bits of bone are incinerated in the same way as surgical waste and amputated body parts are. This means that virtually nothing will be left behind. If, under exceptional circumstances, large parts of the body cannot be plastinated, there is also the option of cremation and anonymous burial at the cemetery.

Scientific postmortem examinations that the IFP performs deal with the normal anatomy of the human body. Diseases and causes of death are only investigated with respect to their significance for medical training. As a result, when it comes to issues such as the cause of death, the IFP cannot provide conclusive and complete information similar to that which is determined in the course of an autopsy.

What Costs Are Incurred?

The donors or their next of kin must pay for the body to be transported to the IFP embalming facility. The IFP does not charge a fee for donating bodies or for plastinating them; there are also no burial costs.

Where Can I Obtain Further Information?

Body Donor Meetings

The IFP hosts regularly scheduled informational events for those who want to donate their bodies for plastination. This is an opportunity to view specimens, learn more about new developments in plastination, and network with each other. All donors are warmly invited to attend and will receive advance notice in writing about the dates.

The IFP will make a decision on an individual basis in the event of any of the following, the deceased has died of a highly contagious or infectious disease; it is not clear who will pay for the transportation costs; or any other unforeseen circumstances that may arise. We are under no legal obligation to accept a body.

How Does My Body Get to the Institute for Plastination?

When a donor dies, the next of kin should notify the nearest body donor office and make arrangements with a funeral home for the body to be transported to the IFP or, for North American donors, to an assigned embalming facility in the US as soon as possible. In warm seasons, arrival at the IFP should not take longer than two or three days after death; during the colder months, the interval can be up to ten days.

The regular formalities that arise when someone dies must be handled before the body can be transferred. Please refer to a separate leaflet provided by the IFP for specific contact details regarding body donation in North America and Europe. If death occurs on a Sunday or a holiday when the Institute for Plastination is not open and if the deceased died at home, local undertakers can be called in and asked to take the body to their mortuary for the time being. The next of kin or the funeral home should then contact the IFP in timely fashion so that the necessary arrangements can be made.

What Happens to a Body during Plastination?

We have already discussed the process of plastination in this brochure. When a body reaches the IFP, the first step is to stop the decomposition process, either by deep-freezing the body or by injecting a fixing agent into the blood vessels. Ideally, the next stage is to consult the deceased’s medical records to plan how to proceed. A decision is reached as to how the organs, parts of the body, or even the whole body will be plastinated, bearing in mind any medical conditions, cause of death, and the wishes expressed by the deceased. Other preparatory work will include injecting the vessels with contrasting plastics, emphasizing the muscles or internal organs, or producing large slices that will subsequently be made transparent. In principle, the whole body can be used for plastination, as all of the organs and parts of the body, whether healthy or diseased, are important for medical training. The remains that are not required such as connective tissue, parts of the skin, and bits of bone are incinerated in the same way as surgical waste and amputated body parts are. This means that virtually nothing will be left behind. If, under exceptional circumstances, large parts of the body cannot be plastinated, there is also the option of cremation and anonymous burial at the cemetery.

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anatomical training, and this is where genuine, permanent specimens truly have an advantage over artificial models.

- Amputated limbs also do not represent an obstacle to becoming a body donor.

The IFP is grateful to receive your donated body. The following conditions must be fulfilled:

1. The donor must have died of natural causes.

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Postscript by Gunther von Hagens: Ensuring the Future of IIP’s Body-Donor Program

Like anatomy lessons at universities, plastination is dependent on people who are willing to donate their bodies after death. By donating your body for plastination, you can make a very special contribution both to the training of future physicians, and other medical professionals and to the education of the general public, because the specimens will not only be available for a short period. They will be used for educational purposes on a long-term basis. Medical professionals take care of our health throughout our lives. By donating your body, you will not be adding your voice to the chorus of complaints that doctors are poorly trained. Instead, you will be doing everything possible as a layman to improve their level of training. By donating your body to plastination, you will be passing on the medical care given to you among the circle of donors, which includes my family and myself.

The body donor program of the IIP is designed to survive in the long run. However, since not everything can be predicted in advance and nothing lasts forever, it cannot be stated for certain that every donation can always be accepted at every point in time in the future. I will make every effort to continue to develop the IIP into a successful, internationally recognized institute from which interested medical training centers can buy anatomical specimens without ethical reservations. The specimens will be used in public museums so that medical experts and lay persons alike can have the opportunity to see normal anatomy and diseases of the human body with a previously unattainable level of authenticity. Furthermore, the IIP will continue to develop and perfect the art of plastination. At the same time, I assure you that I will do everything in my power to make certain that every body donated is used to its greatest potential in order to enhance knowledge about the healthy and diseased anatomy of the human body among lay people, students, and medical professionals and to foster medical research. The scientific work of the IIP will certainly continue after the end of my career or the event of my death. Finally, I would like to thank you for your interest in donating your body for plastination. I would be happy to welcome you among the circle of donors, which includes my family and myself.

Dr. Gunther von Hagens

Appendix

Dr. med. Gunther von Hagens

Curriculum Vitae

11/10/45 Born in Alt-Skalden/Posen, former Eastern Germany
1965–68 Studied medicine at the Friedrich Schiller University in Jena, former Eastern Germany
1968–70 Imprisoned in Gera and Cottbus after a failed attempt to defect; liberated as a political prisoner by the West German government in August 1970
1970–73 Completion of medical studies at the University of Lübeck, Germany
1973–74 Internship at the Helgoland hospital
1974–75 Internship and doctorate completed in the anesthesia and emergency unit of the University of Heidelberg, Germany
1975–77 Resident at the Anatomical Institute, University of Heidelberg, Germany
1977–78 Resident at the Pathological Institute, University of Heidelberg, Germany
1978–95 Anatomist at the Anatomical Institute, University of Heidelberg, Germany
1977–95 Discovered and developed plastination process
1979–94 Organized and held plastination courses in German and English
1980–95 Numerous lectures about plastination in over 25 countries
1982 Began the Body Donation Program for Plastination
1984–96 Served as keynote speaker at 8 international plastination conferences in the US, Germany, Canada, Austria, and Australia
1993 Established the Institute for Plastination in Heidelberg, Germany; Scientific Director
1996 Appointed visiting professor at the Dalian Medical University, China
1996 Founded a plastination center at the State Academy in Bishkek, Kyrgyzstan and at the Dalian Medical University, China; Scientific Director
1999 Named honorary professor at the Kyrgyz State Medical Academy, Kyrgyzstan
2001 Founding of the “Von Hagens Plastination (Dalian) Co. Ltd.” in Dalian, PR China
2004 Named visiting professor at the New York University College of Dentistry, USA
2006 Founding of the Gubener Plastinate GmbH and opening of the PLASTINARIUM in Guben, Germany, a plastination workshop and anatomical exhibition open to the public.

Gunther von Hagens is a member of the following organizations:
German Anatomical Society, International Society for Plastination (honorary member), Rumanian Anatomical Society (honorary member), American Association of Anatomists

Literature

Patents

Major Scientific Publications


Related Literature
G. von Hagens/A. Whalley:


Links
www.bodyworlds.com www.plastinarium.de www.koerperspender.de