

Plastination Reveals the Craniosacral System

By Julie McKay

Author's note: This article is for educational purposes only. I have no financial connection to or other vested interest in the Body Worlds exhibit. I only encourage others to take advantage of the exceptional educational opportunity it offers.

For those of you who would love to attend a dissection class to explore the craniosacral system, this article is for you.

If you have already seen the Body Worlds exhibit of perfectly preserved cadavers created by Dr. GŸnter von Hagens, you may have realized that it is even better than a dissection class. If you have yet to see the Body Worlds exhibit, I have three words for you: Go see it! Body Worlds is an exhibit of perfectly preserved human anatomy specimens using a technique called plastination. The exhibit features whole bodies, individual anatomical specimens and transparent slices.

I have been practicing CranioSacral Therapy (CST) since 1998. It's the work that I love. As a CST teacher's assistant and study group leader for the Upledger Institute, anything pertaining to the craniosacral system gets me excited. When my husband, who is also a massage therapist, told me about the Body Worlds exhibit, I had no idea how much I would learn about the anatomy of the craniosacral system by attending.

The exhibit is currently on display at the Chicago Museum of Science and Industry and takes about two hours to go through. I realized within the first five minutes of walking into Body Worlds that something amazing was about to be revealed to me. After seeing the exhibit the first time, I had to tell everyone interested in the craniosacral system or CST to see it. Why? Dr. von Hagens has preserved delicate anatomy that is rarely done justice in anatomy texts or dissection classes. This exhibit displays many wonderful views of exposed cranial bones; intra- and extra-cranial membranes, including dural tubes, dural nerve

sleeves, tentorium and falx; and lots of cranial nerves.



Sagittal slice of cranium and neck.

Image courtesy of Body Worlds. Used with permission.

Around the exhibit entrance is a display of horizontal body preserved by epoxy resin. The item that caught my attention was the sagittal slice of the cranium and neck allowing an unusual view of the orientation of the occiput, atlas and axis. Once in the exhibit area, cases and upright specimens are on display with over 200 specimens in all. The first full plastinate is "Cartilage-Ligament Skeleton." (623)* Walk around to the back and stand on your tiptoes. You will see your first up-close look at the falx cerebri and tentorium of the intracranial membrane system. Also easily viewed are the sagittal and straight sinuses.

In the display case (203) the smallest bones of the body are displayed - those of the ear. Seeing them up close allows you to realize why the mechanisms of hearing are so sensitive - it does not take much to affect them, as they are so tiny and light. Their close proximity to the temporal bones allows us to appreciate how a blow to the head can have a negative impact on hearing and how CST can allow the body to restore balance to this delicate mechanism.

Look at the suboccipital region of "Muscle Man with Skeleton." We can get a good visual of the extensive muscles and connective tissue that need to be softened to have access to the atlas, C1, which is used in an atlanto-occipital or cranial base release. "Torso with Severely Deformed Spinal Column" (205) helps us to understand the effects of Wolfe's Law, how bone grows or changes to accommodate the stresses it is placed under. We see that the ribs, vertebrae, illia, and even the coccyx have accommodated the stress of the body, but still allow the internal organs to be protected.



Body Front.

Image courtesy of Body Worlds. Used with permission. Have you ever seen a wormian bone? A wormian bone is a small, irregular bone that forms along the cranial sutures. Well, take a good look at the lamdoidal suture of "The Runner" (614). At first glance everything looks normal. But upon closer observation you'll realize that there is an extra bone above the occiput and between the parietals. Usually, wormian bones are small but this one is probably the largest one that most of us will ever view. I'd hypothesize that either the infantile occiput did not fully ossify into one bone or at some point in time the occiput was stressed and a "crack" or additional suture developed. The craniofacial nerves can be viewed around the left temporal region of "The Runner." We can also see a wonderful view of the psoas. By seeing where it attaches we realize that doing respiratory and pelvic diaphragm releases can affect this muscle. The view of the brachial plexus helps us realize how restrictions can be released with a thoracic inlet release.

Spend plenty of time observing the intra- and extra-cranial membranes and cranial nerves of "Poised Plastinate of Nervous System" (604). The posterior view reveals the exterior side of the dura mater and the interior side of the arachnoid mater of the dural tube. Additionally, a rare view of the vomer bone is offered.

In the brain specimen cases, there are wonderful views of the ventricles (252) where cerebral spinal fluid is produced. And check out the brain slice of the cerebral cortex showing black marks due to Alzheimer's disease. Viewing this brain slice we can understand that if the cerebral spinal fluid does not optimally flow around the brain, it does not have the opportunity to chelate, pick up, and remove the deposits, which can lead to Alzheimer's disease.



Chess Player.

Image courtesy of Body Worlds. Used with permission. My favorite display is the "Chess Player" (603). The posterior portions of the vertebrae have been removed to reveal the dural tube and spinal cord. You can view where the brainstem ends and the superior portion of the spinal cord begins, as well as the cauda equina, nerve roots and dural sleeves. Looking closely, you may also be able to identify some denticulate ligaments and the termination of the dural sac. Other nerves of note are the sciatic nerve and the left trigeminal nerve. We can better understand the major impact that facilitated segments can have on the body by being able to observe this complex pathway of nerves. I am absolutely fascinated by how intricate our bodies are.

Moving on to the arterial specimens, "Arterial-Skeletal" (351) shows the carotid artery's entry into the head through the carotid canal. The sphenoid, temporal and occipital bones form the carotid canal. Viewing this gave me a better appreciation for how making sure that these cranial bones are properly moving can help improve the delivery of arterial blood to the brain. "Torchbearer" provides a beautiful view of the hyoid bone, the only floating bone in the body, and its muscular attachments. Viewing this specimen can help those who have difficulty locating the hyoid during CST sessions by giving us a visual to reference.

Hanging is "Representative Series of Slices, Female." We can view in these transparent slices how the tentorium attaches to the temporal bones and how the falx attaches to the parietal bones. This allows us to visualize and realize how temporal ear pulls and parietal lifts, respectively, can engage the intracranial membrane system. Toward the end of the exhibit hangs "3-D Slice Plastinate" (620). Examine both sides of the 3rd and 4th slices in particular. The intracranial membrane is visible, particularly the tentorium's attachment to the temporal bones.

Last, but by no means least, is the "Cyclist," an expanded body that provides space to better view the relationship between the bones, organs, and muscles of our bodies. I often feel how big a cyclist looks after receiving a CST session, when a lot of my restrictions have been released. Afterward, I feel bigger on the inside, as if I have more space available to me.

For anyone interested in the workings of the body and what lies beneath our skin, Body Worlds is a must see exhibit! It is well worth making the effort to see regardless of where you live. I hope you enjoy the exhibit and walk away with a better understanding of what lies beneath your hands when you work with your clients. It certainly has opened my eyes and allowed me to better realize what I am affecting when working with my clients, "craniosacrally" speaking.

For more information on Body Worlds, visit www.bodyworlds.com.

*Parenthetical numbers refer to the audio tour discussion for that specimen. I use these numbers as an additional means of identifying a particular specimen. I recommend the advanced level audio tour.

Exhibit Information

Body Worlds:

- Now through September 5, 2005: Museum of Science and Industry, Chicago, Ill. www.msichicago.org.
- October 7, 2005 - April 23, 2006: Franklin Institute, Philadelphia, Penn. www.fi.edu.

Body Worlds 2:

- Now through September 18, 2005: Great Lakes Science Center, Cleveland, OH
www.greatscience.com.



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