Zygote Human Anatomy Version 5.0 Upgrades

Upgrade 5.0: Skeleton System

With the last release of the Zygote Anatomy Collections, a completely new skull was introduced. It includes an Interior Cranium, Sinuses, and intricate details such as foramina, sutures, and auditory ossicles. In the newest release of the Zygote Skeleton, the remaining bones of the skeleton have been entirely replaced with new bones developed from CT scans. With geometric and texture details to match the highest accuracy standards set with the new skull, each new bone is extremely detailed and matches the intense fidelity of the skull.

The new skeleton is perfect for ultra-high resolution renders. Each bone has been painstakingly textured from high resolution photographs of each bone resulting in region-specific cortical textures that are true to life. Ten high-resolution texture maps were needed to create the ultimate surface and color detail. The end result is awe inspiring geometry coupled with amazing texture maps that will help your project be superior.

Upgrade 5.0: Muscles

In this new version of the Zygote Anatomy Collections, an overhaul of the naming convention makes finding and selecting muscles more quick and easy. Because muscle names are no longer abbreviated, even the nomenclature novice will easily avoid confusion while searching for specific structures. The entire Muscle System has been refitted to integrate with the new Skeletal System. Completely new or improved models include:

* Genioglossus
* Styloglossus
* Hyoglossus
* Geniohyoid
* Mylohyoid
* Internal Pterygoideus
* External Pterygoideus
* Intercostals

Upgrade 5.0: Connective Tissues

A complete refitting of the Connective Tissue System was required with the addition of the new Skeleton. Each joint capsule, ligament, bursa, and cartilage tissue has been either rebuilt or reshaped to integrate with the new Skeleton.

Upgrade 5.0: Lymphatic System

Along with adding a lot of realism and detail, the Lymphatic System has been rebuilt to better suit animation. Each lymph node connects seamlessly with lymph ducts so that the entire model can be deformed without any separation between individual components of the system. Detailed lymph tissue models

of the abdomen, thorax, pelvis, and neck in the Lymph System have been added. Details showing proper synchronization between the Lymphatic System and the Circulatory System are also included.

Upgrade 5.0: Organs

Every organ has been adjusted to fit properly within the new Skeleton model. Nomenclature has been revised to eliminate abbreviation and make selection simpler than ever.

Upgrade 5.0: Nervous System

The Nervous System has been refined and has undergone a major upgrade. The entire model has been rebuilt to better enable deformation during animation. Closer integration of the Nervous System with other systems of the body and higher levels of nerve detail and branching throughout the body are new features of this version. Abbreviations within the naming convention have been replaced with expanded nerve names for expedient selection. An increased number of named nerves allows easy identification and focusing for more convenience working with the models.

New nerves added include:

* Suprascapular Nerve
* Medial Antebrachial Cutaneous Nerve
* Medial Brahcial Cutaneous Nerve
* Axillary Nerve
* Posterior Brachial Cutaneous Nerve
* Lateral Antebrachial Cutaneous Nerve
* Palmar Branch of Ulnar Nerve
* Common and Proper Palmar Digital Branches of the Median Nerve
* Superficial Branch of the Radial Nerve
* Dorsal Digital Branches of the Radial Nerve
* Iliohypogastric Nerve
* Ilioinguinal Nerve
* Genitofemoral Nerve
* Obturator Nerve
* Pudendal Nerve
* Saphenous Nerve
* Plantar Nerve

Upgrade 5.0: Circulatory System

The Circulatory System has been improved by creating a single-mesh treatment of the geometry. This enables more drastic deformation without interpenetration of blood vessels, and a more natural treatment of bifurcations of arteries and veins. New blood vessel branching in almost every region of the body significantly increases the detail of the model. Thorough grouping and naming of segments of circulation enables quick focusing on, and isolation of specific portions of the Circulatory System.

Completely new blood vessels include:

* Transverse Cervical Artery
* Suprascapular Artery
* Subscapular Artery
* Deep Brachial Artery
* Acromial Branch of Throracromial Artery
* Inferior Phrenic Arteries
* Esophageal Arteries
* Transverse Branch of Lateral Circumflex Femoral Artery
* Articular Branch of Descending Genicular Artery
* Medial Superior Genicular Artery
* Lateral Superior Genicular Artery
* Lateral Inferior Genicular Artery
* Medial Inferior Genicular Artery
* Anterior Recurrent Tibial Artery
* Circumflex Fibular Artery
* Anterior Recurrent Tibial Artery
* Lateral Circumflex Femoral Vein
* Anterior Femoral Cutaneous Vein
* Accessory Saphenous Vein

Zygote Human Anatomy Version 4.5 Upgrades

Upgrade 4.5: Skull - Interior Cranium

* Sella Turcica
* Clivus
* Grooves for Sinuses and Meningeal Vessels
* Internal Occipital Crest and Protuberance
* Basilar Part
* Trigeminal Impression
* Arcuate Eminence

Upgrade 4.5: Skull - Sinuses

* Frontal
* Maxillary
* Sphenoidal
* Ethmoidal Air Cells

Upgrade 4.5: Skull - Foramina, Fissures, Canals

* Foramen Magnum
* Jugular Fossa
* Carotid Canal
* Condyloid Canal
* Foramen Lacerum
* Foramen Ovale
* Foramen Rotundum
* Foramen Spinosum
* Greater Palatine Foramen
* Incisive Fossa
* Optic Canal
* Superior Orbital Fissure
* Inferior Orbital Fissure
* Lacrimal Foramen
* Cribriform Plate
* Foramen Cecum
* Internal Auditory Meatus
* External Auditory Meatus
* Mental Foramen
* Infraorbital Foramen
* Supraorbital Foramen

Upgrade 4.5: Skull - Sutures/Articulations of Each Bone

Upgrade 4.5: Skull - Inner Ear

* Tympanic Cavity
* Incus, Stapes, and Mallleus
* Round and Oval Windows
* Vestibule

* Semicircular Canals
* Ampullae
* Cochlea

Upgrade 4.5: Skull - Detailed Nasal Cavity

* Inferior, Middle, and Superior Nasal Concha
* Uncinate Process
* Ethmoidal Bulla
* Palatine Process of Maxilla
* Palatine Bone
* Vomer
* Perpendicular Plate

Upgrade 4.5: Skull - Inner Ear

* 3 Bone-Specific, Highly Detailed Color Maps
* 3 Bone-Specific, Highly Detailed Bump Maps

Upgrade 4.5: Skull - New Nasal Cavity, Mouth and Pharynx

* New Tissues of Nasal Septum
* New Tissues of Nasal Cavity
* New Tissues of Maxillary, Sphenoidal and Frontal Sinus
* New Tissues of Ethmoidal Air Cells
* Palatine and Pharyngeal Tonsils
* Pahryngeal Opening of Auditory Tube

Upgrade 4.5: Skull - New Eye with Interior

* Optic Nerve
* Central Retinal Artery and Vein
* Retina
* Choroid
* Sclera
* Cornea
* Lens
* Anterior Chamber
* Iris
* Zonular Fibers
* Ciliary Processes
* Medial, Lateral, Superior, and Inferior Rectus Muscles
* Inferior Oblique Muscle
* Superior Oblique Muscle

Upgrade 4.5: Circulatory System - New & Circulation to Head, Neck & Face

* Superior Thyroid Artery and Vein
* Superior Laryngeal Artery and Vein
* Posterior Auricular Artery and Vein
* Occipital Artery and Vein
* Meningeal Arteries and Veins

Upgrade 4.5: Circulatory System - Improved Circulation to Head, Neck and Face

* Facial Artery and Vein
* Superficial Temporal Artery and Vein
* Angular Artery and Vein
* Alveolar Artery and Vein
* Deep Temporal Artery and Vein
* Maxillary Artery and Vein
* Retromandibular Vein

Upgrade 4.5: Nervous System - New Nerves of Head, Neck and Face

* Lingual Nerve

Upgrade 4.5: Nervous System - Improved Nerves of Head and Face

* Optic Nerve – synchronized with eye model
* Facial Nerves
* Trigeminal Nerve

Upgrade 4.5: New Spleen Model

* Geometry derived from scan data
* High resolution texture map

Upgrade 4.5: Improved Harmony Between Systems

* Urinary
    * Kidneys
* Digestive
    * Large Intestines
    * Small Intestines
* Reproductive
* Circulatory
    * Renal Arteries and Veins
* Nervous System Changed to Accommodate New Skull

Upgrade 4.5: Improved Integumentary System

* Compatible with New Skull Upgrades
* Compatible with Reproductive Upgrades
* Compatible with Digestive Upgrades

Zygote Human Anatomy Version 4.0 Upgrades

Upgrade 4.0: Muscular System

* Improvement of the Superficial Muscles of the Back, Foot, Hand & Knee
* New Deep Muscles of the Back
    - Rectus capitis anterior, lateralis, posterior minor & major
    - Rectus capitis lateralis
    - Longus capitis & colli
    - Obliquus capitis superior & inferior
    - Rotatores cervicis, thoracis & lumborum (longus & brevis)
    - Semispinalis thoracis, cervicis & capitis
    - Longissimus thoracis, cervicis & capitis
    - Iliocostalis cervicis, thoracis & lumborum
    - Multifidus
    - Serratus Posterior Inferior & Superior
* New Deep Muscles of the Foot
    - Flexor hallucis brevis
    - Lumbricals
    - Quadratus plantae
    - Flexor digiti minimi brevis
    - Adductor hallucis
    - Plantar interosseous
    - Dorsal interosseous
* New Muscles of the Hand
    - Palmaris brevis
    - Lumbricals
* New Muscle of Knee
    - Plantaris
    - Popliteus

Upgrade 4.0: Connective Tissue

* General Improvement of the Connective Tissue of the Knee, Pelvis & Foot
* New Connective Tissue of the Pelvis
    - Obturator membrane
    - Sacrotuberous ligament
    - Sacrospinous ligament
    - Anterior sacroiliac ligament
    - Posterior sacroiliac ligament
    - Anterior sacrococcygeal ligament
    - Lateral sacrococcygeal ligaments
    - Iliolumbar ligament
* New Connective Tissue of the Knee
    - Arcuate popliteal ligament
    - Lateral patellar retinaculum
    - Medial patellar retinaculum
    - Posterior ligament of the head of fibula
    - Interosseous membrane
    - Oblique popliteal ligament
    - Bursa beneath Semimembranosus tendon
    - Bursa beneath iliotibial tract
    - Bursa beneath fibular collateral ligament

- Bursa beneath biceps femoris tendon
- Bursa beneath lateral & medial heads of gastrocnemius
- Anserine bursa
- Subcutaneous prepatellar bursa
- Deep infrapatellar bursa
- Knee joint capsule

* New Connective Tissue of the Foot
  - Plantar aponeurosis
  - Superior & Inferior extensor retinaculum
  - Superior & Inferior peroneal retinacula
  - Flexor retinaculum
  - Plantar calcaneonavicular ligament
  - Long plantar ligament
  - Plantar calcaneocuboid ligament
* Upgraded Nervous System
  - New Dura Mater Sheathing the Spinal Cord
  - New Ventral and Dorsal Nerve Roots
  - New Spinal Ganglia
    - New Thoracic Sympathetic Trunk and Ganglia
* Upgraded Lymphatic System with Appropriate Ducting and Drainage

Zygote Human Anatomy Version 3.5 Upgrades

Upgrade 3.5: Nervous System

Our upgraded Nervous System model has increased detail to the Brain including a Cerebrum better revealing typical features such as landmark sulci and gyri; it also now includes internal brain anatomy. Newly improved grouping better enables users to easily select and show any feature of the brain; now simply add transparency to the Cerebrum and Cerebellum to reveal anatomical features deep within the Brain.

Upgraded Features to Brain 3.5 include:

* Increased Cerebral Definition
* Central Sulcus
* Superior Frontal Sulcus
* Lateral Sulcus
* Precentral Gyrus
* Postcentral Gyrus
* Superior Frontal Gyrus
* Interior Anatomy
* Basal Ganglia
* Caudate Nucleus
* Putamen
* Globus pallidus
* Lateral Medial
* Fornix
* Mamillary Bodies
* Amygdaloid Bodies
* Body of Fornix
* Hippocampus
* Thalamus
* Hypothalamus
* Subthalamic Nucleus
* Substantia Nigra
* Lateral Ventricle
* Interventricular Foramen
* Third Ventricle
* Cerebral Aqueduct
* Fourth Ventricle

Insula and Brain Stem models are available separately.

Upgrade 3.5: Circulatory System

Our upgraded Circulatory System model now includes much more detailed and accurate vessels to and from every organ. Branches of arteries and veins providing circulation to viscera as well as reproductive organs now enables illustration of blood flow from the heart to every organ and extremity of the body.

Upgraded Features of the Circulatory System 3.5

* Vasculature of Liver
* Vasculature of Stomach
* Vasculature of Kidneys
* Vasculature of Large and Small Intestines
* Vasculature of Spleen
* Vasculature of Pancreas
* Vasculature of Reproductive Organs

Upgrade 3.5: New Connective Tissue Model

Our new Connective Tissue model now is sold as part of the Male and Female Anatomy Collections 3.5. Each joint of the appendicular skeleton is included - from the Distal Interphalangeal Joints of the hands and feet, to the Ligaments and Acetabular Surfaces of the shoulders and hips. Each individual ligament and bursa is modeled independently and grouped so that users can easily focus illustrations or animations on relevant joint anatomy.

Joints included in the Connective Tissue Model 3.5 include:

* Interphalangeal Joints of the hands and feet
* Metacarophalangeal Joints
* Metatarsophalangeal Joints
* Deep Transverse Metacarpal and Metatarsal Ligaments
* Ligaments of Wrist
* Ligaments of Ankle
* Interosseous Membranes of Arm and Leg
* Ligaments and Cartilage of Knee
* Ligaments and Capsule of Elbow
* Ligaments and Cartilage of Hip
* Ligaments and Cartilage of Shoulder

Upgrade 3.5: Organ Texture Map

With version 3.5, texture maps are available not only for the exteriors of every organ, but now a texture and bump map is also available for the interior of the Stomach.

Upgrade 3.5: Male Reproductive System

Our Male Reproductive System has been upgraded to now include much greater anatomical detail. Synchronizing with our version 3.5 Circulatory System, blood flow to and from the male Reproductive System can be illustrated along with detailed structures of male anatomy.

Upgrades to the Male Reproductive System 3.5 include:

* Detailed Blood Vessels to Testis and Penile Tissue
* Detailed Testicles with Rete Testis and Seminiferous Tubules
* Tunica Albuginea
* Efferent Ductules
* Epididymis
* Ductus Deferens

* Cremaster Muscle
* Scrotal Facia
* Detailed Seminal Vesicle
* Detailed Prostate
* Prostatic Utricle
* Ejaculatory Ducts

Upgrade 3.5: Lymphatic System

Upgrades have been made to the Lymphatic System to improve its positioning in relation to other systems of the body. Now users will more easily illustrate the relationship of Lymph Nodes to other anatomical features of the body.
Upgrade 3.5: Muscle System

The male Muscle System now includes muscles of the pelvic floor, and has been upgraded with increased connective tissue details in the texture map.