

## Special Spine Models

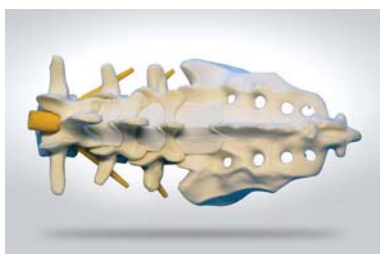
As a full service provider, SYNBONE offers selection of special spine models.

### Lumbar Spine for Spinal Decompression

This lumbar spine model has been developed for spinal decompression training. The surgeon will enter the spine by removing the membrane of the flava ligament. After that, the nerve root will be moved to the side so that the herniated portion of the disc material can be removed to release pressure for healing. This model comes with large spine section from L3 to Sacrum with nerves and flava ligament.

#### LDPR1535 Spine Ig lumbar

|                    |   |                 |   |
|--------------------|---|-----------------|---|
| <b>Description</b> | Lumbar Spine section from L3 to Sacrum with nerves and flava ligament | <b>Fracture</b> | Intact model  |
| <b>Dimensions</b>  | Overall length: 235 mm  | <b>Remarks</b>  | Used for micro-decompression/micro-discectomy exercise. Delivered with additional cancellous bone |
| <b>Material</b>    | Solid foam: low density, Disk: soft flexible foam, Nerves: rubber     |                 |   |



### Lumbar Spine for Sacral-Alar-Iliac-Fixation

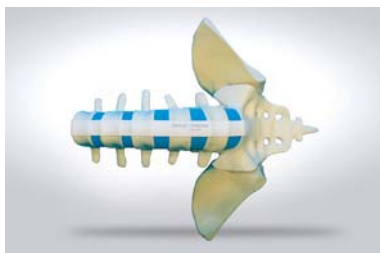
This lumbar spine model has been developed specifically for the Sacral-Alar-Iliac technique for sacropelvic fixation. This model comes with large lumbar spine section from L1 to sacrum and hemi-iliac.

#### Features of LDPR1534 Spine Ig Lumbar L1-L5 hemi Iliac:

- A large-size model meaning a more anatomically detailed model
- The low-density (LD) cortical bone mixture allows screws to be inserted with much less force
- Better surface around the pedicle for the placement of pedicle screw
- Large vertebra surface in the lumbar area for easy tool access
- Features lumbar spine L1-Sacrum for lumbosacral fixation
- Features hemi-iliac to facilitate sacro-pelvic fixation with screws

#### LDPR1534 Spine Ig Lumbar L1-L5 hemi Iliac

|                    |   |                 |  |
|--------------------|---|-----------------|--|
| <b>Description</b> | Large lumbar Spine section from L1 to Sacrum and hemi Iliac               | <b>Fracture</b> | Intact model   |
| <b>Dimensions</b>  | Overall length: 330 mm  | <b>Remarks</b>  | Model used for sacral-alar-iliac technique for sacro-pelvic fixation |
| <b>Material</b>    | Solid foam: low density, Disk: soft flexible foam, Hemi-Iliac: solid foam |                 |  |



# PRODUCT DETAILS

## Lumbar Spine Models for Kyphoplasty or Vertebroplasty

These series of spine models have been developed for Kyphoplasty or Vertebroplasty surgery training. They feature an open cell foam inlay surrounded by low dense cortical bone. These specific vertebrae are only to be found on the spine section T10-L5. The models can be used to simulate vertebral augmentation whereby a small incision is made on the bone and a narrow tube is inserted, creating a path to the specific vertebrae/fracture through the pedicle area. The metallic coating on the bones enables the model to be fully radiopaqued for X-ray scanning so that the balloon can be inserted into the targeted vertebrae through the tube before it is inflated to elevate the fracture. Thanks to the open cell foam inlay, cement can be applied to stabilize the spine.

All of the following models have the same structure and material. They only vary in the segment of the spine that they feature.

### LDPR1409.9 Spine Thoracal-lumbar T7-L5

|                    |   |                 |  |
|--------------------|---|-----------------|--|
| <b>Description</b> | Thoracal-Lumbar Spine from T7 to L5 with white metallic coating   | <b>Fracture</b> | Intact model   |
| <b>Dimensions</b>  | Overall length: 392 mm  | <b>Remarks</b>  | T7-L5 can be used for vertebral augmentation application / Radiopaque used for C-scans |
| <b>Material</b>    | Spine T7-T9 solid foam low density, Spine T10-L5 solid foam low density / open cell cancellous bone. Disk: soft flexible foam |                 |  |



### LDPR1536.9 Spine lumbar T10-L5

|                    |   |                 |   |
|--------------------|---|-----------------|---|
| <b>Description</b> | Lumbar Spine from T10 to L5 with white metallic coating.                                | <b>Fracture</b> | Intact model  |
| <b>Dimensions</b>  | Overall length: 298mm   | <b>Remarks</b>  | T10-L5 can be used for vertebral augmentation application / Radiopaque used for C-scans |
| <b>Material</b>    | Spine T10-L5 cortical low density / open cell cancellous bone. Disk: soft flexible foam |                 |   |



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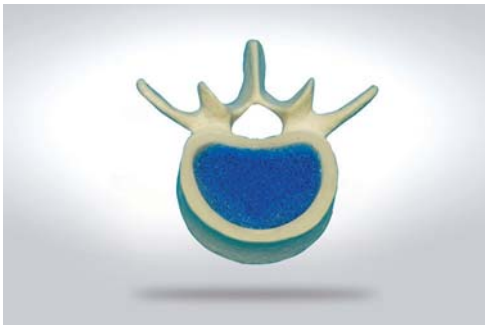
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## LDPR0770.9 Spine lumbar T10-L5 Sacrum

|                    |  |                 |  |
|--------------------|--|-----------------|--|
| <b>Description</b> | Lumbar Spine section from T10-L5 and Sacrum with white metallic coating.   | <b>Fracture</b> | Intact model   |
| <b>Dimensions</b>  | Length: 390 mm   | <b>Remarks</b>  | Used for vertebral augmentation cement application / Radiopaque used for C-scans |
| <b>Material</b>    | Sacrum: solid foam low density<br>Vertebrae T10-L5: Cortical low density / open cell cancellous bone. Disk: soft flexible foam |                 |  |



In addition, we can support you with two single vertebrae for your cement augmentation demonstration.



### PR0830 Vertebra

|                    |   |
|--------------------|---|
| <b>Description</b> | Large lumbar vertebra with pre-drilled pedicular canal, filled with open cell foam and covered with a transparent |
| <b>Dimensions</b>  | Transverse process width: 98mm.<br>Pedicular drill hole diameter: 3mm   |
| <b>Fracture</b>    | Intact model  |
| <b>Material</b>    | Vertebra: Solid foam. Foam Inlay: open cell PPI 20 blue   |



**PR1010** → the foam is a little bit stiffer because it is soaked with Acryl.

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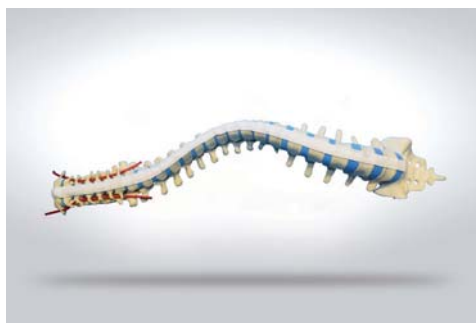
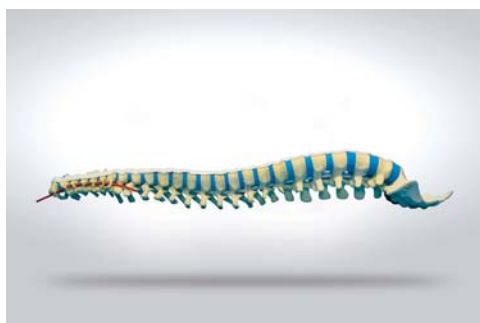
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## Spine model for Scoliosis

Thanks to the integrated bending rod, you can create your own scoliosis. Multiple and repeatable bending in different segments and soft rotation are possible.

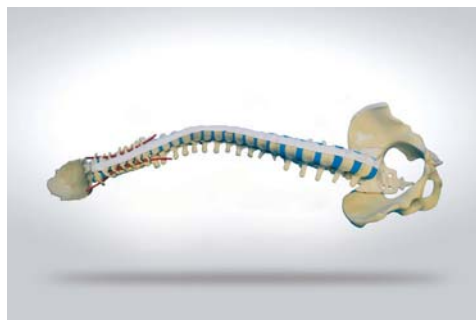
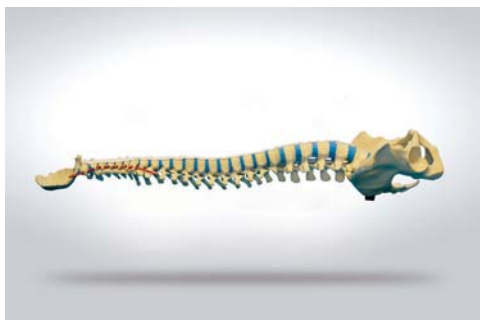
### LD9315.7 Spine lg C1-L5 Sacrum flex rod

|                    |  |                 |  |
|--------------------|--|-----------------|--|
| <b>Description</b> | Entire Large Spine from C1 to Sacrum with vertebral arteries and bending rod | <b>Fracture</b> | Intact model   |
| <b>Dimensions</b>  | Overall length: 780 mm   | <b>Remarks</b>  | Used for demonstration of scoliosis syndrome and allows repeatable reduction of scoliosis angulation and rotation. Delivered with additional cancellous bone block and bending |
| <b>Material</b>    | Solid foam: low density, Disk: soft foam, flexible                           |                 |  |



### LD9305.7 Spine lg Occiput Pelvis flex rod

|                    |   |                 |   |
|--------------------|---|-----------------|---|
| <b>Description</b> | Entire large Spine with Occipital bone, all Vertebrae, sacrum, pelvis with vertebral arteries and bending rod         | <b>Fracture</b> | Intact model  |
| <b>Dimensions</b>  | Overall length: 910mm   | <b>Remarks</b>  | Delivered with additional cancellous bone block and bending rod to bend a scoliosis |
| <b>Material</b>    | Vertebrae: solid foam low density. Occiput: solid foam. Pelvis: Solid foam, dense cancellous bone Disk: soft flexible |                 |   |



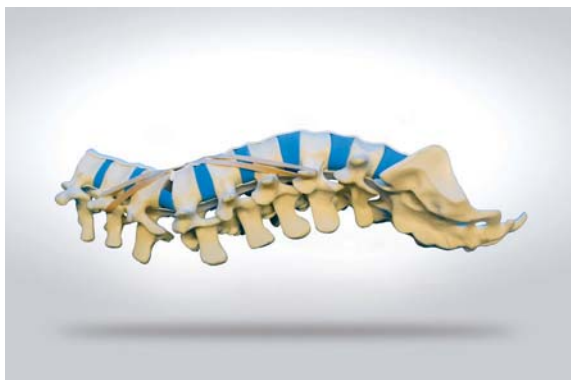
## Fractured models

In addition to the existing fractured models, here are two new models featuring a wedge fracture:



### LD9381 Spine lg thoraco lumbar T9-L4 fx

|                    |  |
|--------------------|--|
| <b>Description</b> | Large thoraco lumbar Spine section from T9 to L4 fractured |
| <b>Dimensions</b>  | Overall length: 273mm                                      |
| <b>Material</b>    | Solid foam low density. Disk: soft flexible foam           |
| <b>Fracture</b>    | Wedge fracture L1  |
| <b>Remarks</b>     | Intervertebral disk defect T12/L1                          |



### LD9378 Spine lg lumbar T10-L5 Sacrum fx

|                    |   |
|--------------------|---|
| <b>Description</b> | Large lumbar Spine section from T10 to Sacrum fractured |
| <b>Dimensions</b>  | Overall length: 417 mm                                  |
| <b>Material</b>    | Solid foam low density. Disk: soft flexible foam        |
| <b>Fracture</b>    | Wedge fracture L1                                       |
| <b>Remarks</b>     | Intervertebral disk defect T12/L1                       |

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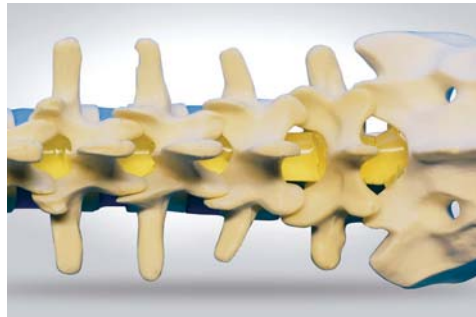
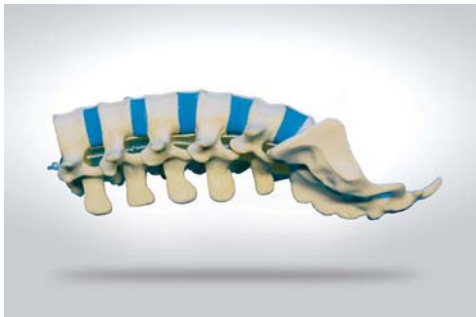
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## Spine Model with Dura Mater and spinal cord

For advanced training SYNBONE has created cervical and lumbar models with transparent dura mater and yellow spinal cord. When the dura mater is accidentally injured, a liquid leaks out to make the injury visible. The dura mater can then be sutured. This enables to sensitize the participant in the workshop to the complexity of such surgeries.

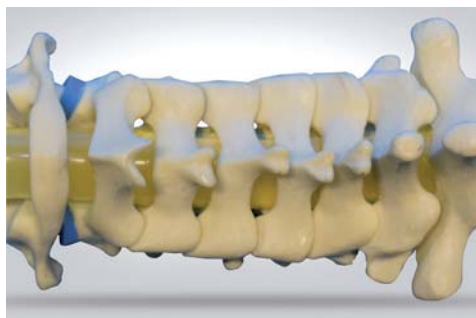
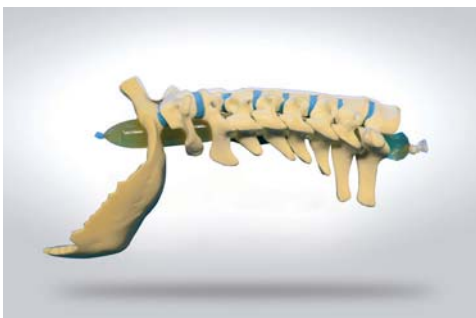
### LD9379.8 Spine lg lumbar L1-L5 Sacrum

|                    |   |                 |  |
|--------------------|---|-----------------|--|
| <b>Description</b> | Large lumbar Spine section from L1 to Sacrum with transparent dura mater and yellow spinal cord | <b>Fracture</b> | Intact model   |
| <b>Dimensions</b>  | Overall length: 335mm   | <b>Remarks</b>  | Spine Dura storage life is 6 months from production date |
| <b>Material</b>    | Solid foam Low Density. Disk: soft flexible foam Dura: PE Cord: gelling agents                  |                 |  |



### LD9391.8 Spine lg cervical C1-T1 Occiput

|                    |  |                 |  |
|--------------------|--|-----------------|--|
| <b>Description</b> | Large cervical spine with Occipital bone, vertebrae C1 to T1, transparent dura mater and yellow spinal cord  | <b>Fracture</b> | Intact model   |
| <b>Dimensions</b>  | Overall length: 265mm  | <b>Remarks</b>  | Spine Dura storage life is 6 months from production date |
| <b>Material</b>    | Occiput:solid foam, C1 to T1: Solid foam low density Disk: soft foam, flexible Dura: PE Cord: gelling agents |                 |  |





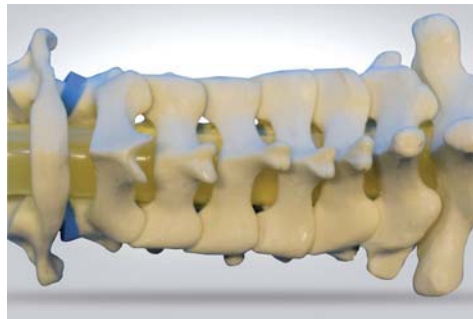
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## LD9399.8 Spine Ig cervical C1-C7

|                    |   |                 |  |
|--------------------|---|-----------------|--|
| <b>Description</b> | Large cervical Spine section from C1 to C7 with transparent dura mater and yellow spinal cord | <b>Fracture</b> | Intact model   |
| <b>Dimensions</b>  | Overall length: 152mm   | <b>Remarks</b>  | Spine Dura storage life is 6 months from production date |
| <b>Material</b>    | Solid foam Low Density. Disk: soft flexible foam Dura: PE Cord: gelling agents                |                 |  |



### All SYNBONE Spine models have the following technical advantages:

- Detailed and realistic anatomy
- Better surface around the pedicle for the placement of pedicle screw
- Thanks to the low dense cortical material, screws can be inserted with much less force, resulting in a more realistic and successful outcome for the participants during the training workshop.

As details make the difference SYNBONE is your preferred partner for better education outcome.

Customized solutions are also available, please contact us if you need another model definition.

SYNBONE worldwide contact information – [sales@synbone.com](mailto:sales@synbone.com)