# Construction of Surface Models :

# ITK-SNAP

ITK-SNAP

Shift Brazil (0:25) sáb 20:04 Joao Rob...Goncalves

[No Image] - ITK-SNAP 2.2.0

File Segmentation Overlay Tools Layout Help

***ITK-SNAP***
Version 2.2.0
May 4, 2011

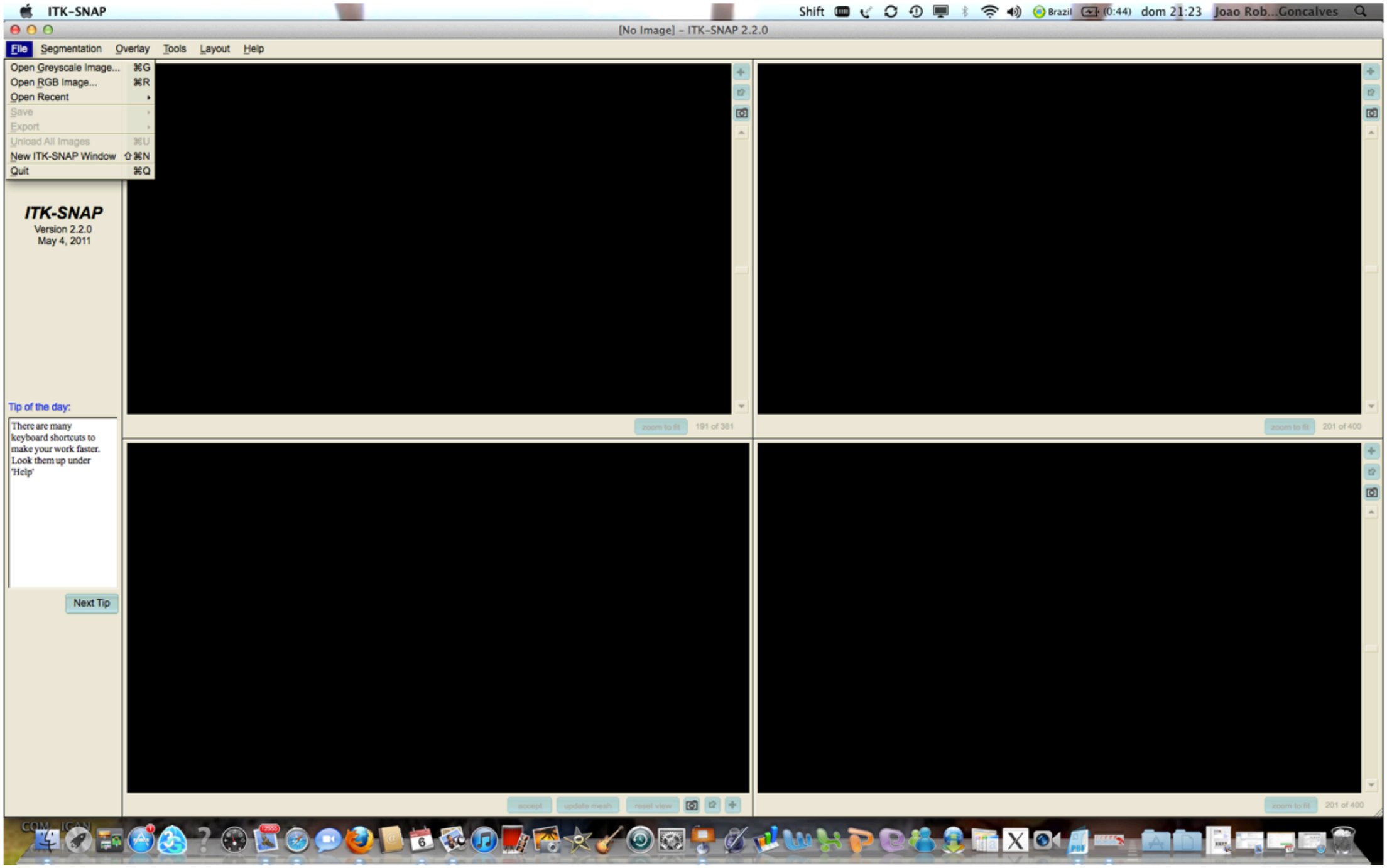
Tip of the day:

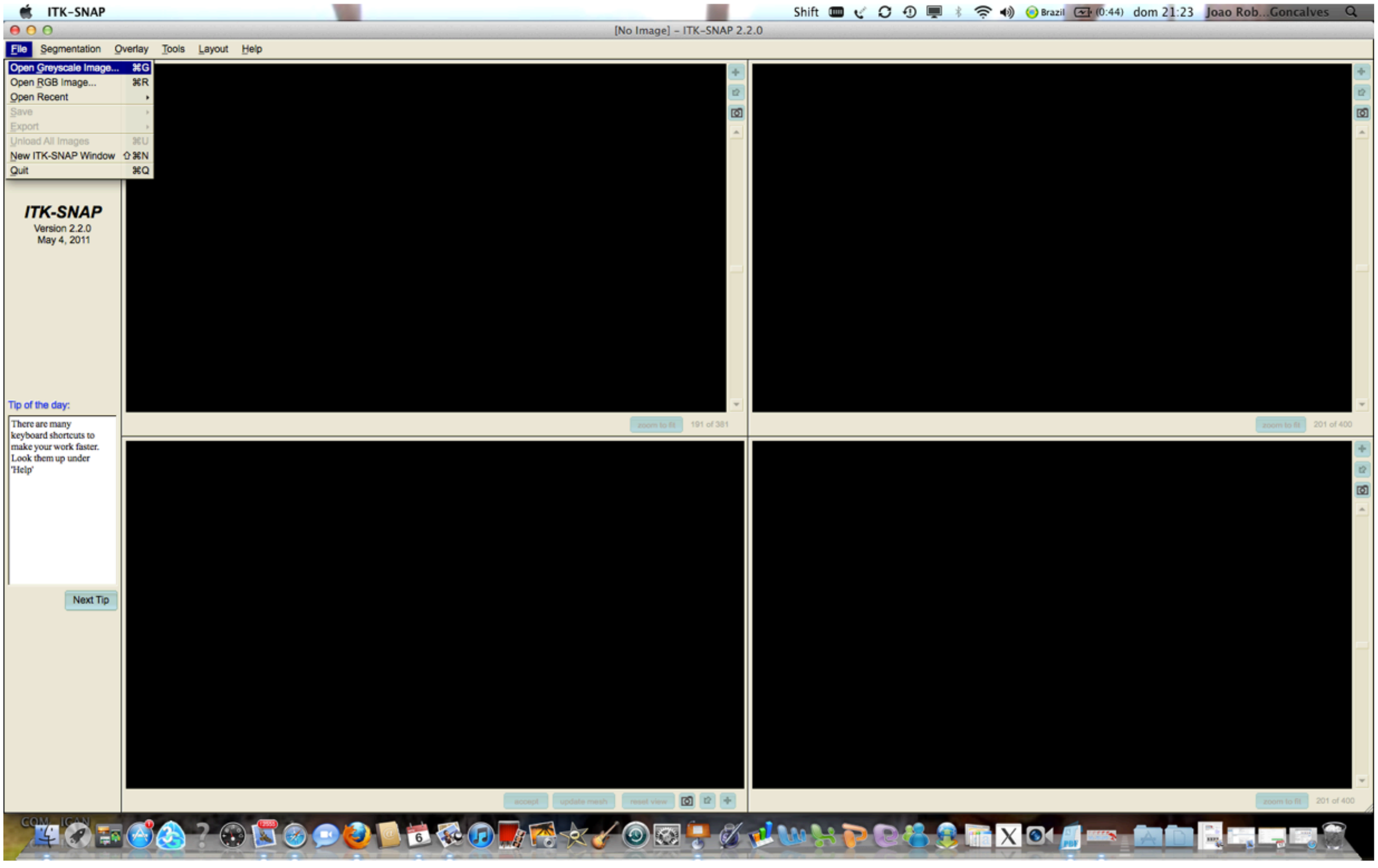
ITK-SNAP supports multiple image layers. Each layer has its own contrast settings, opacity, and color map.Load layers using the 'Overlay' menu. Edit them using the Layer Inspector, under 'Tools'.

Next Tip

zoom to fit

zoom to fit


ITK-SNAP
Shift
Brazil
(0:44)
dom 21:23
Joao Rob...Goncalves
[No Image] – ITK-SNAP 2.2.0
File
Segmentation
Overlay
Tools
Layout
Help
Open Greyscale Image... ⌘G
Open RGB Image... ⌘R
Open Recent
Save
Export
Unload All Images ⌘U
New ITK-SNAP Window ⇧⌘N
Quit ⌘Q
ITK-SNAP
Version 2.2.0
May 4, 2011
Tip of the day:
There are many keyboard shortcuts to make your work faster. Look them up under 'Help'
Next Tip
zoom to fit
191 of 381
zoom to fit
201 of 400
accept
update mesh
reset view
zoom to fit
201 of 400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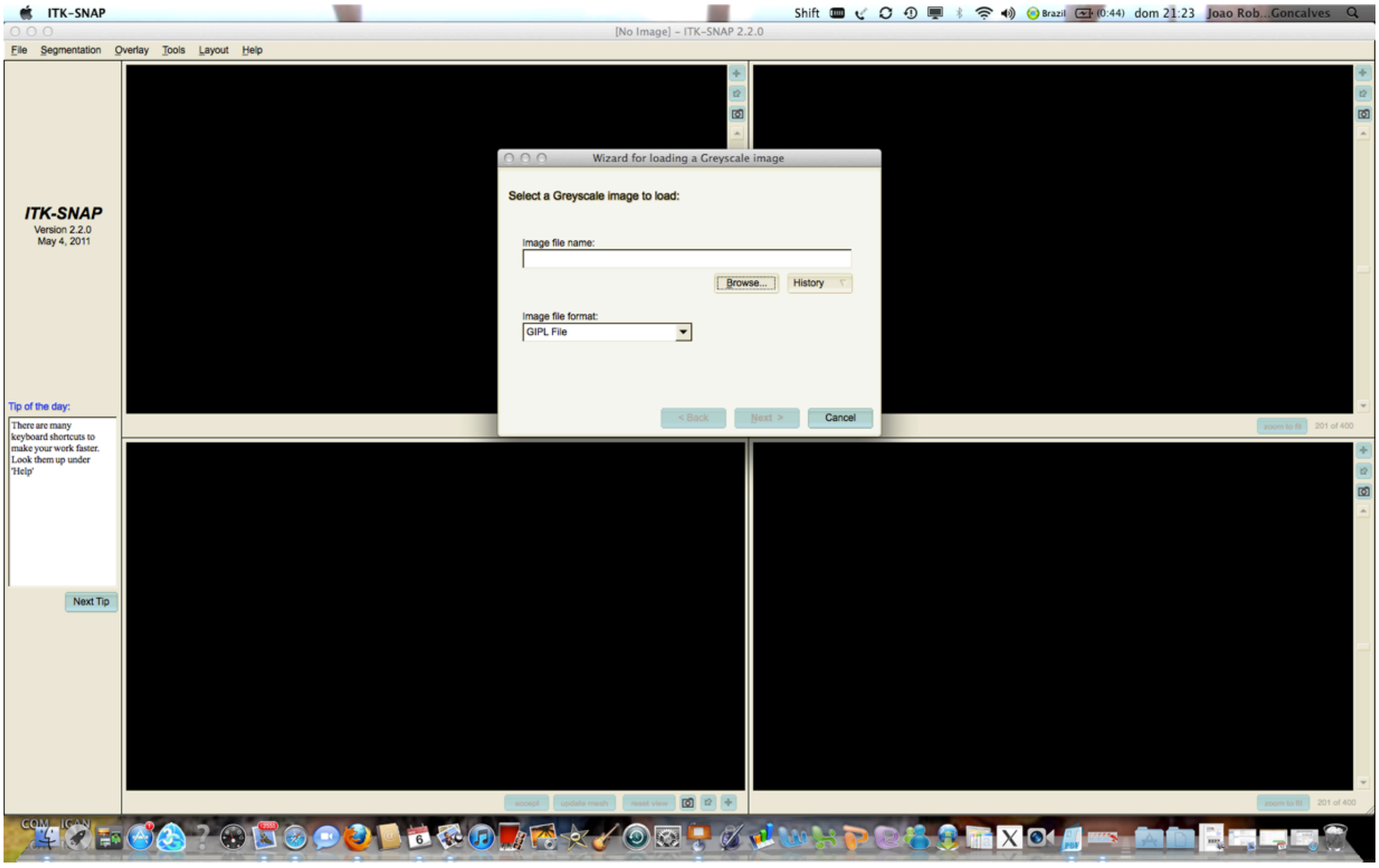
201 of 400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Brazil
(0:44)
dom 21:23
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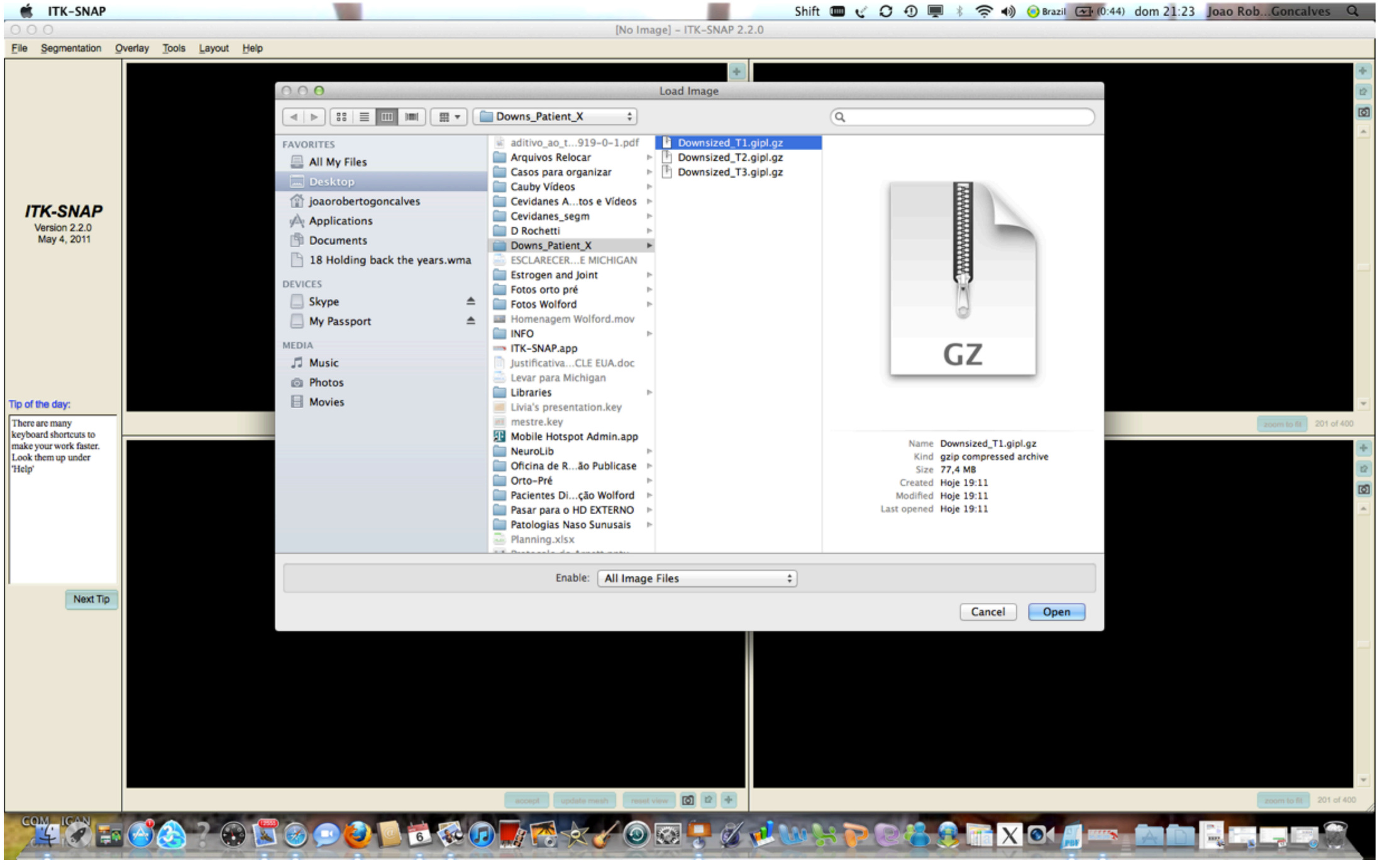
Next Tip
Wizard for loading a Greyscale image
Select a Greyscale image to load:
Image file name:
Browse...
History
Image file format:
GIPL File
< Back
Next >
Cancel
zoom to fit
201 of 400
accept
update mesh
reset view


ITK-SNAP
Shift
Brazil
(0:44)
dom 21:23
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Overlay
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Layout
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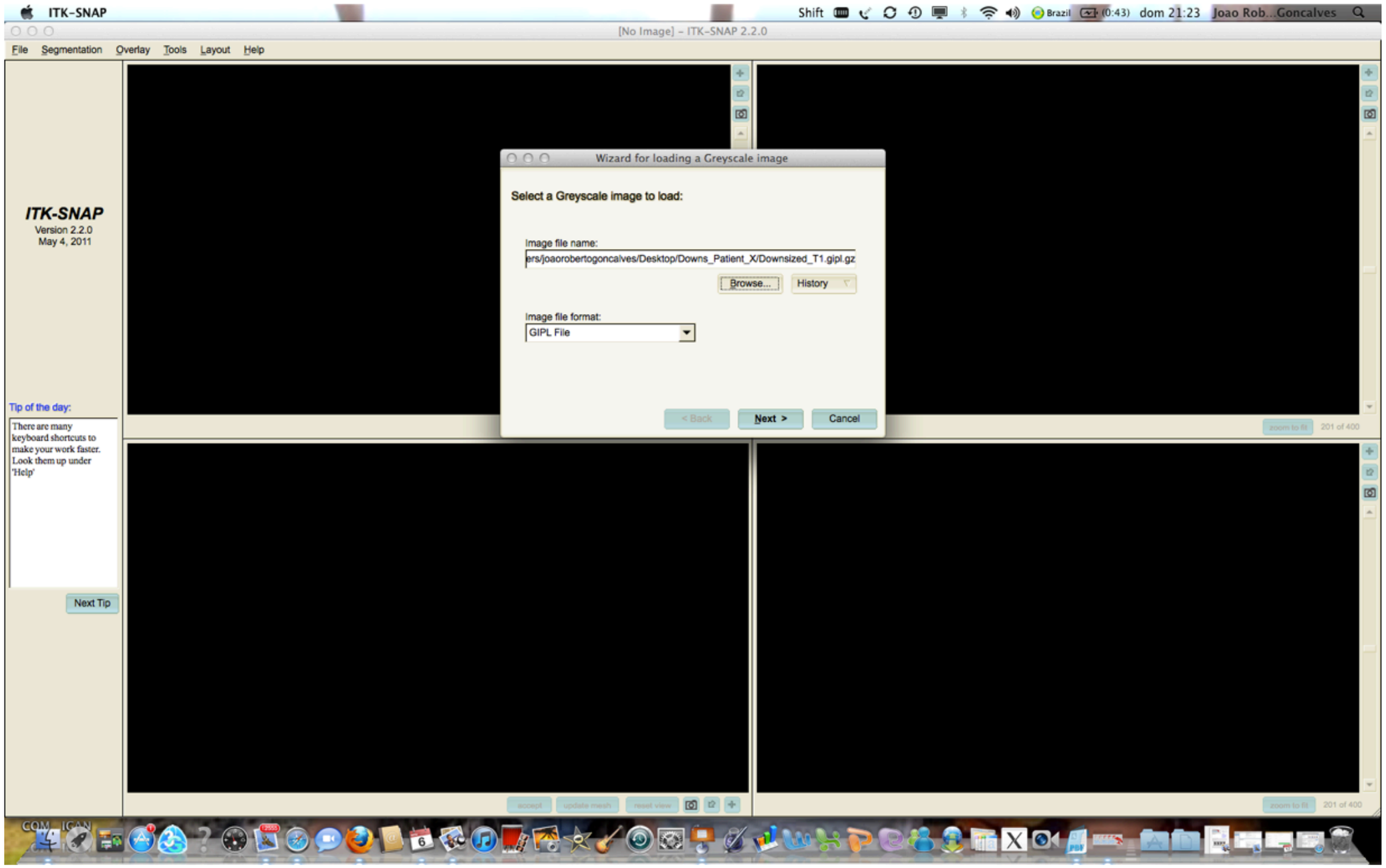
Next Tip
Load Image
Downs_Patient_X
FAVORITES
All My Files
Desktop
joaorobertogoncalves
Applications
Documents
18 Holding back the years.wma
DEVICES
Skype
My Passport
MEDIA
Music
Photos
Movies
aditivo_ao_t...919-0-1.pdf
Arquivos Relocar
Casos para organizar
Cauby Vídeos
Cevidanes A...tos e Vídeos
Cevidanes_segm
D Rochetti
Downs_Patient_X
ESCLARECER...E MICHIGAN
Estrogen and Joint
Fotos orto pré
Fotos Wolford
Homenagem Wolford.mov
INFO
ITK-SNAP.app
Justificativa...CLE EUA.doc
Levar para Michigan
Libraries
Livia's presentation.key
mestre.key
Mobile Hotspot Admin.app
NeuroLib
Oficina de R...ão Publicase
Orto-Pré
Pacientes Di...ção Wolford
Pasar para o HD EXTERNO
Patologias Naso Sunusais
Planning.xlsx
Downsized_T1.gipl.gz
Downsized_T2.gipl.gz
Downsized_T3.gipl.gz
GZ
Name Downsized_T1.gipl.gz
Kind gzip compressed archive
Size 77,4 MB
Created Hoje 19:11
Modified Hoje 19:11
Last opened Hoje 19:11
Enable: All Image Files
Cancel
Open
zoom to fit
201 of 400
accept
update mesh
reset view


ITK-SNAP
Shift
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(0:43)
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Joao Rob...Goncalves
[No Image] - ITK-SNAP 2.2.0
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Segmentation
Overlay
Tools
Layout
Help
ITK-SNAP
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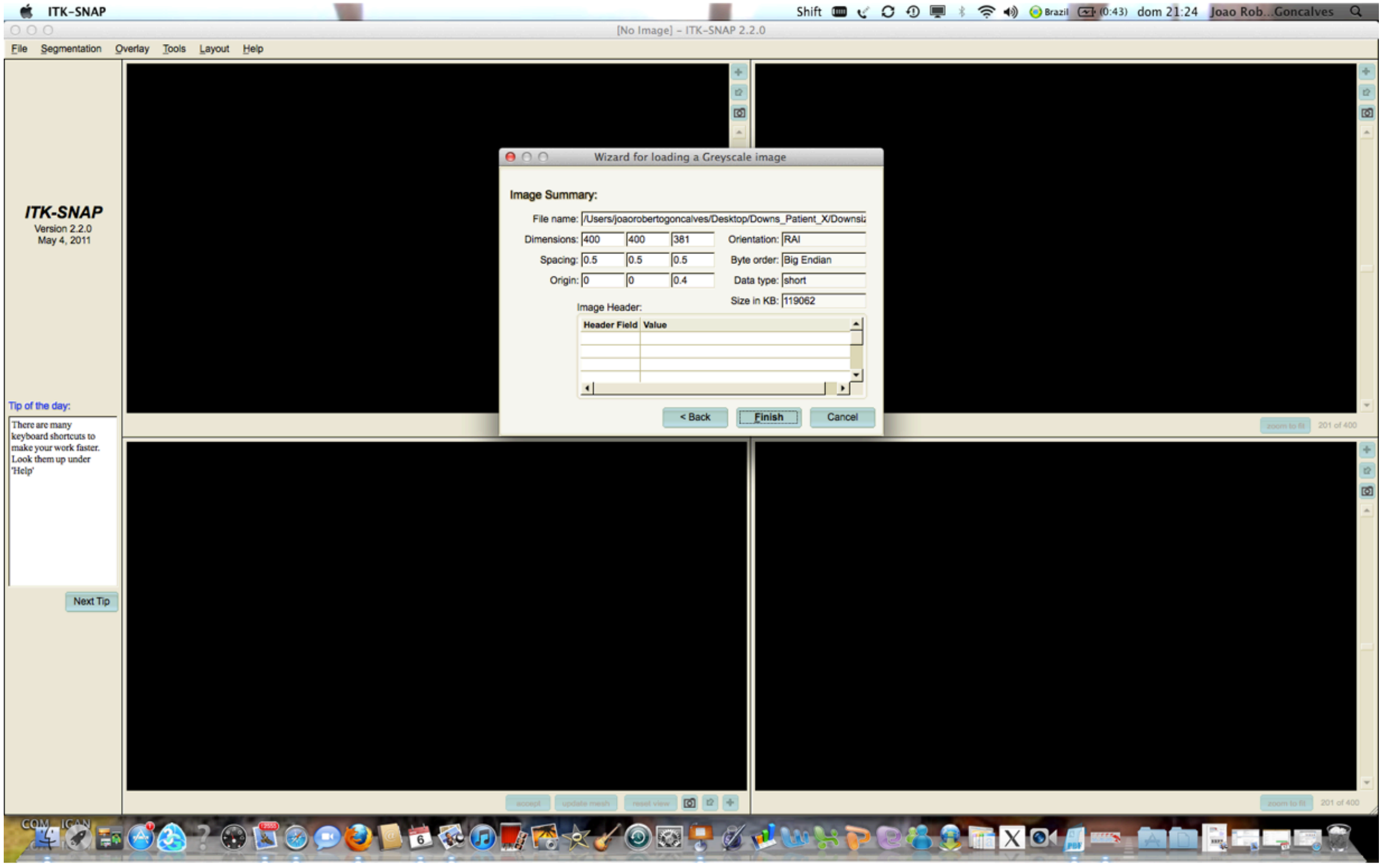
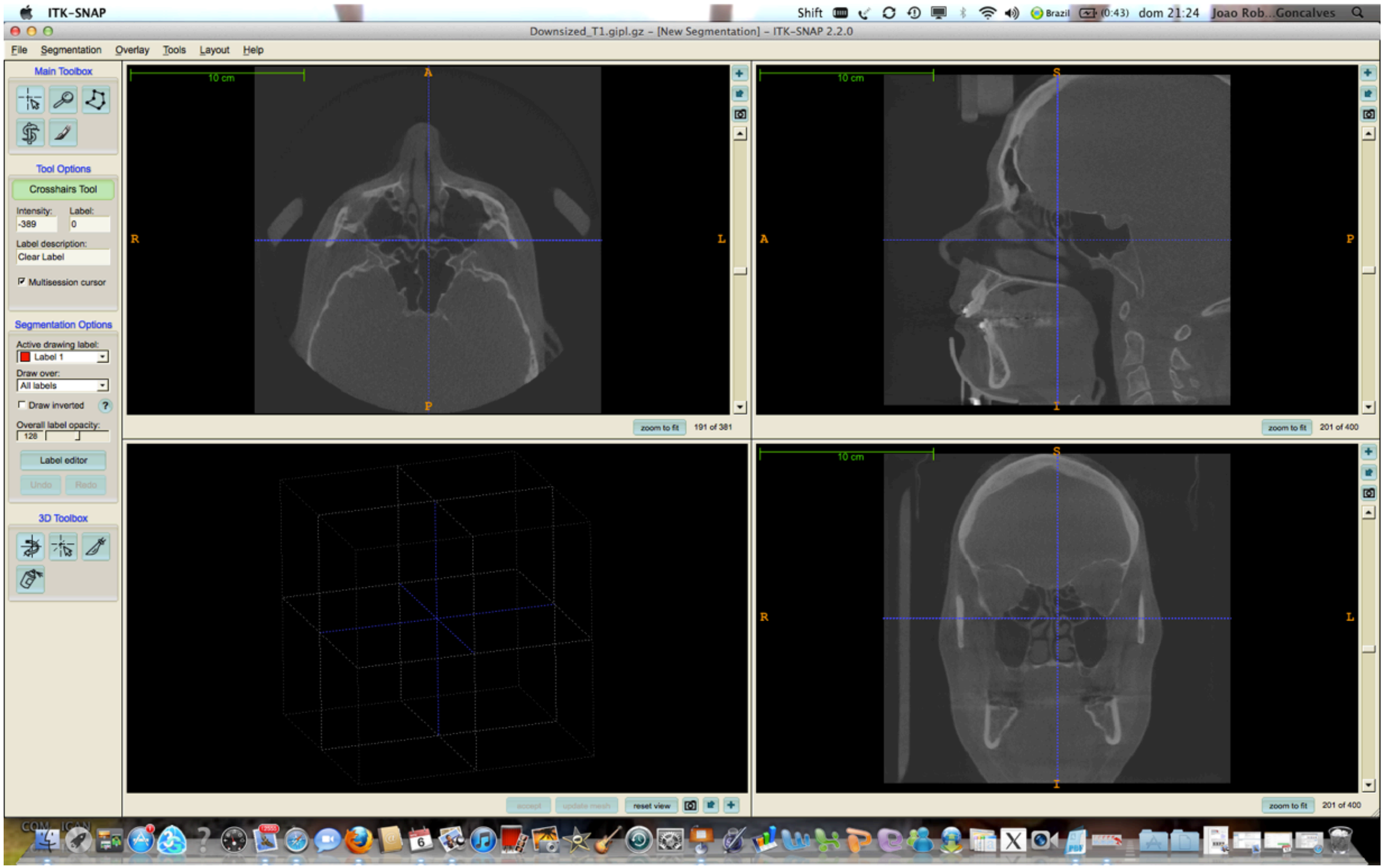
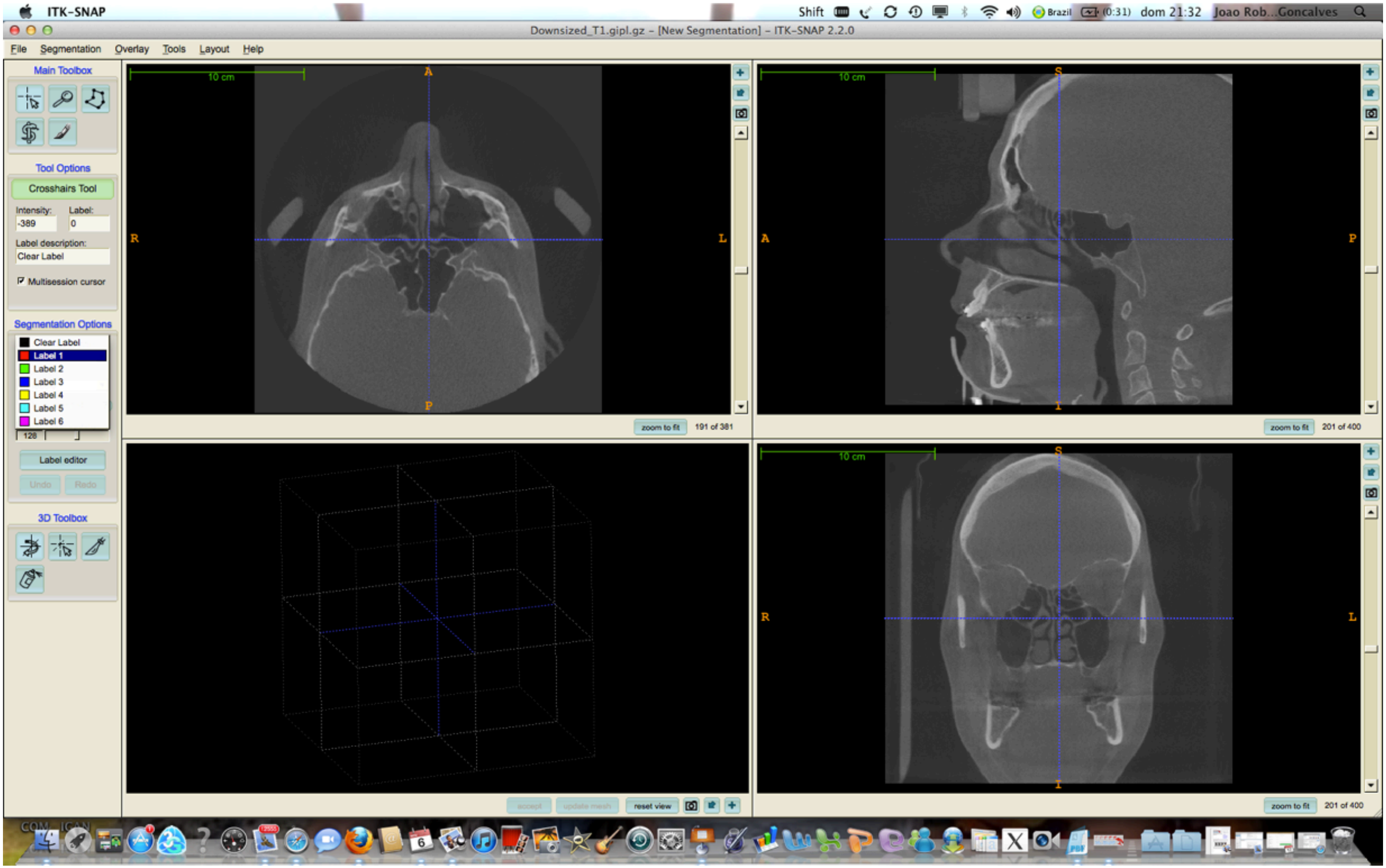
Next Tip
Wizard for loading a Greyscale image
Select a Greyscale image to load:
Image file name:
ers/joaorobertogoncalves/Desktop/Downs_Patient_X/Downsized_T1.gipl.gz
Browse...
History
Image file format:
GIPL File
< Back
Next >
Cancel
zoom to fit
201 of 400
accept
update mesh
reset view


ITK-SNAP
Shift
Brazil
(0:43)
dom 21:24
Joao Rob...Goncalves
[No Image] - ITK-SNAP 2.2.0
File
Segmentation
Overlay
Tools
Layout
Help
ITK-SNAP
Version 2.2.0
May 4, 2011
Tip of the day:
There are many keyboard shortcuts to make your work faster. Look them up under 'Help'
Next Tip
Wizard for loading a Greyscale image
Image Summary:
File name: /Users/joaorobertogoncalves/Desktop/Downs_Patient_X/Downsi
Dimensions: 400 400 381
Orientation: RAI
Spacing: 0.5 0.5 0.5
Byte order: Big Endian
Origin: 0 0 0.4
Data type: short
Size in KB: 119062
Image Header:
Header Field
Value
< Back
Finish
Cancel
zoom to fit
201 of 400
accept
update mesh
reset view


ITK-SNAP
Shift
Brazil
(0:43)
dom 21:24
Joao Rob...Goncalves
Downsized_T1.gipl.gz - [New Segmentation] - ITK-SNAP 2.2.0
File
Segmentation
Overlay
Tools
Layout
Help
Main Toolbox
Tool Options
Crosshairs Tool
Intensity:
-389
Label:
0
Label description:
Clear Label
Multisession cursor
Segmentation Options
Active drawing label:
Label 1
Draw over:
All labels
Draw inverted
Overall label opacity:
128
Label editor
Undo
Redo
3D Toolbox
10 cm
A
R
L
P
S
I
zoom to fit
191 of 381
201 of 400
accept
update mesh
reset view


ITK-SNAP
Shift
Brazil
(0:31)
dom 21:32
Joao Rob...Goncalves
Downsized_T1.gipl.gz - [New Segmentation] - ITK-SNAP 2.2.0
File
Segmentation
Overlay
Tools
Layout
Help
Main Toolbox
Tool Options
Crosshairs Tool
Intensity:
-389
Label:
0
Label description:
Clear Label
Multisession cursor
Segmentation Options
Clear Label
Label 1
Label 2
Label 3
Label 4
Label 5
Label 6
128
Label editor
Undo
Redo
3D Toolbox
10 cm
A
R
L
P
zoom to fit
191 of 381
S
I
201 of 400
accept
update mesh
reset view

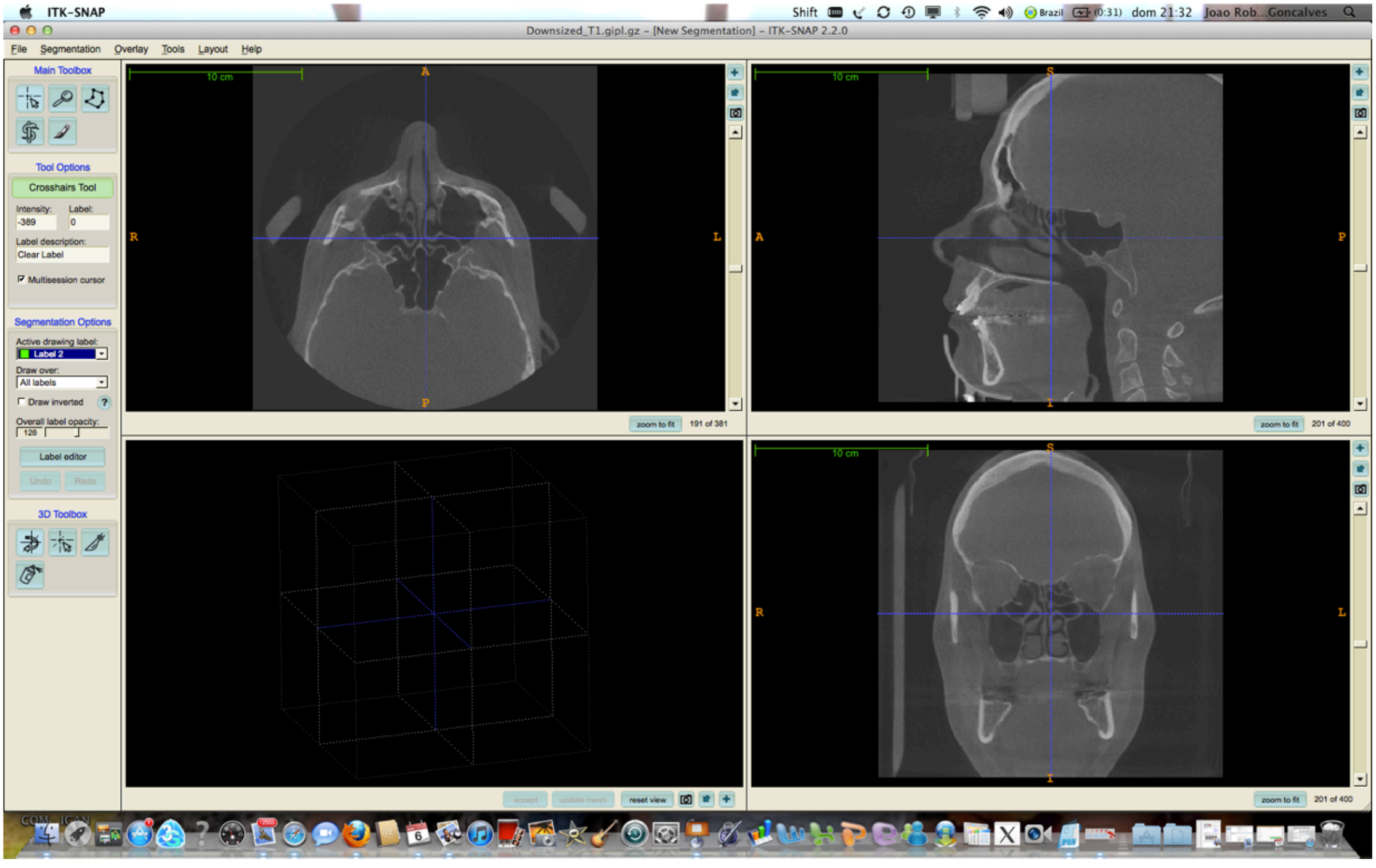
*ITK-SNAP can be used in two different modes:*

*manual segmentation*

*and semi-automatic segmentation.*

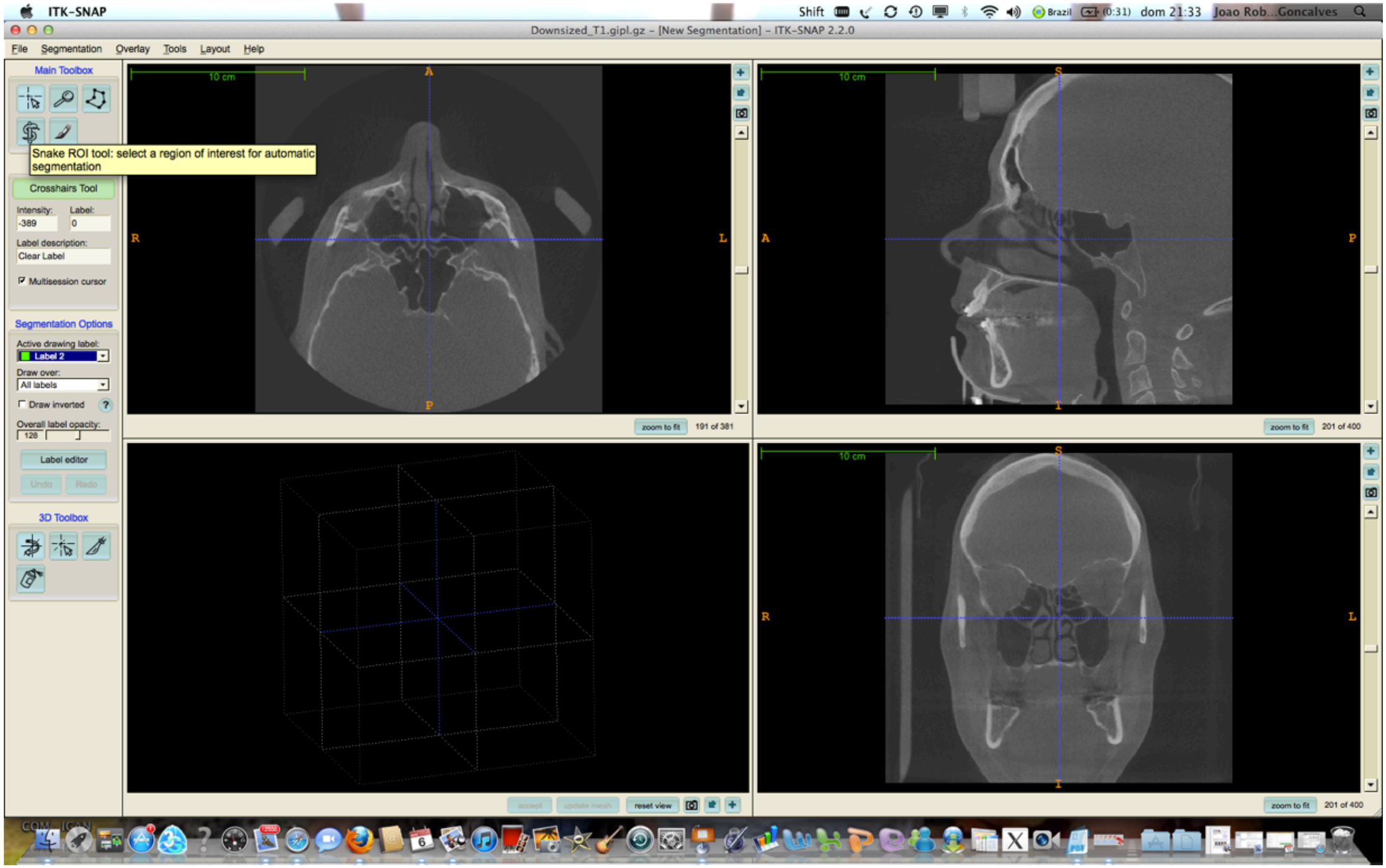
# Manual Mode

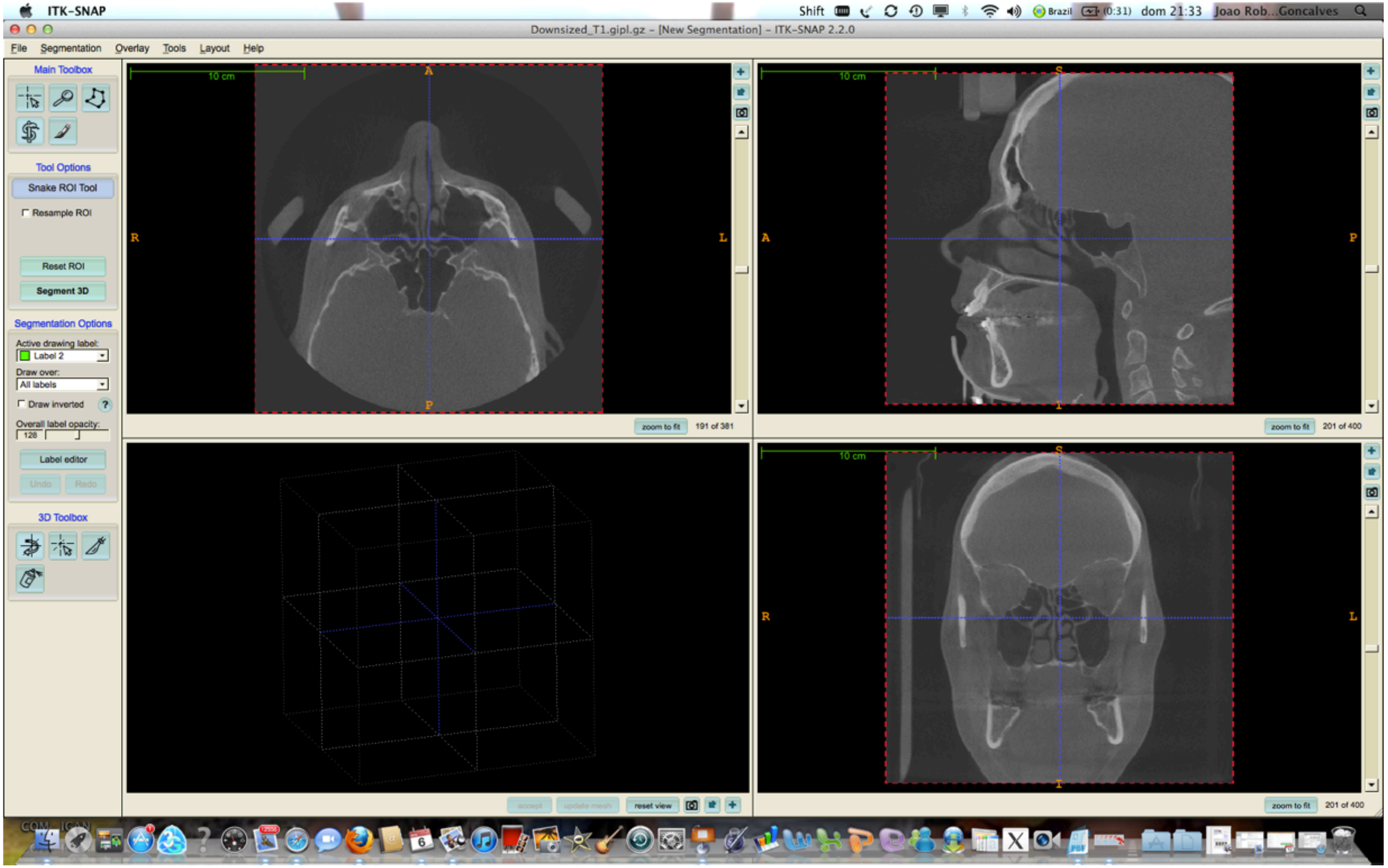
*The manual mode is used for segmentation using hand contouring and for cleaning up the results of automatic segmentation.*

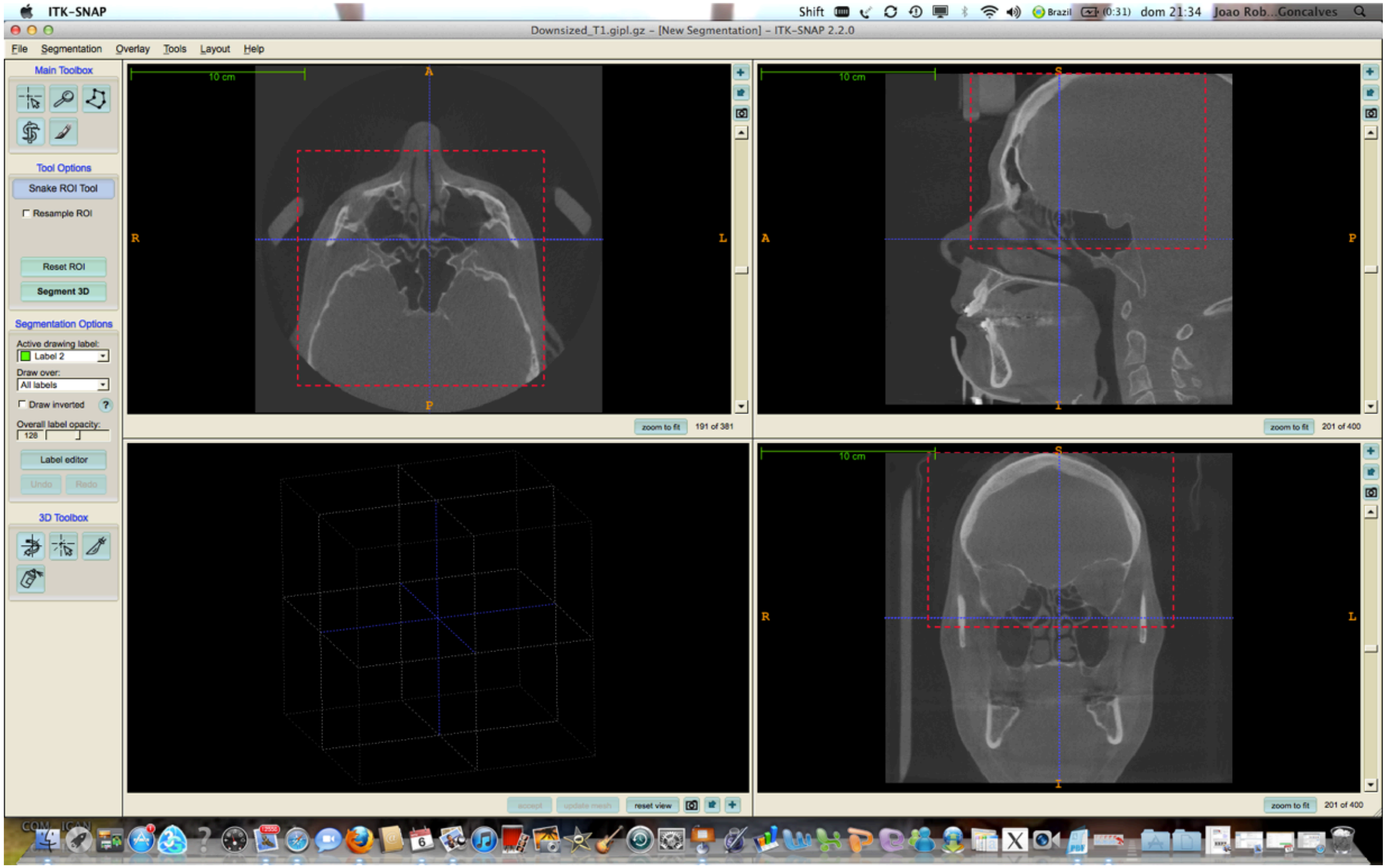

ITK-SNAP
Shift
Brazil
(0:31)
dom 21:32
Joao Rob...Goncalves
Downsized_T1.gipl.gz - [New Segmentation] - ITK-SNAP 2.2.0
File
Segmentation
Overlay
Tools
Layout
Help
Main Toolbox
Tool Options
Crosshairs Tool
Intensity:
-389
Label:
0
Label description:
Clear Label
Multisession cursor
Segmentation Options
Active drawing label:
Label 2
Draw over:
All labels
Draw inverted
Overall label opacity:
128
Label editor
Undo
Redo
3D Toolbox
10 cm
A
R
L
P
zoom to fit
191 of 381
S
I
201 of 400
accept
update mesh
reset view

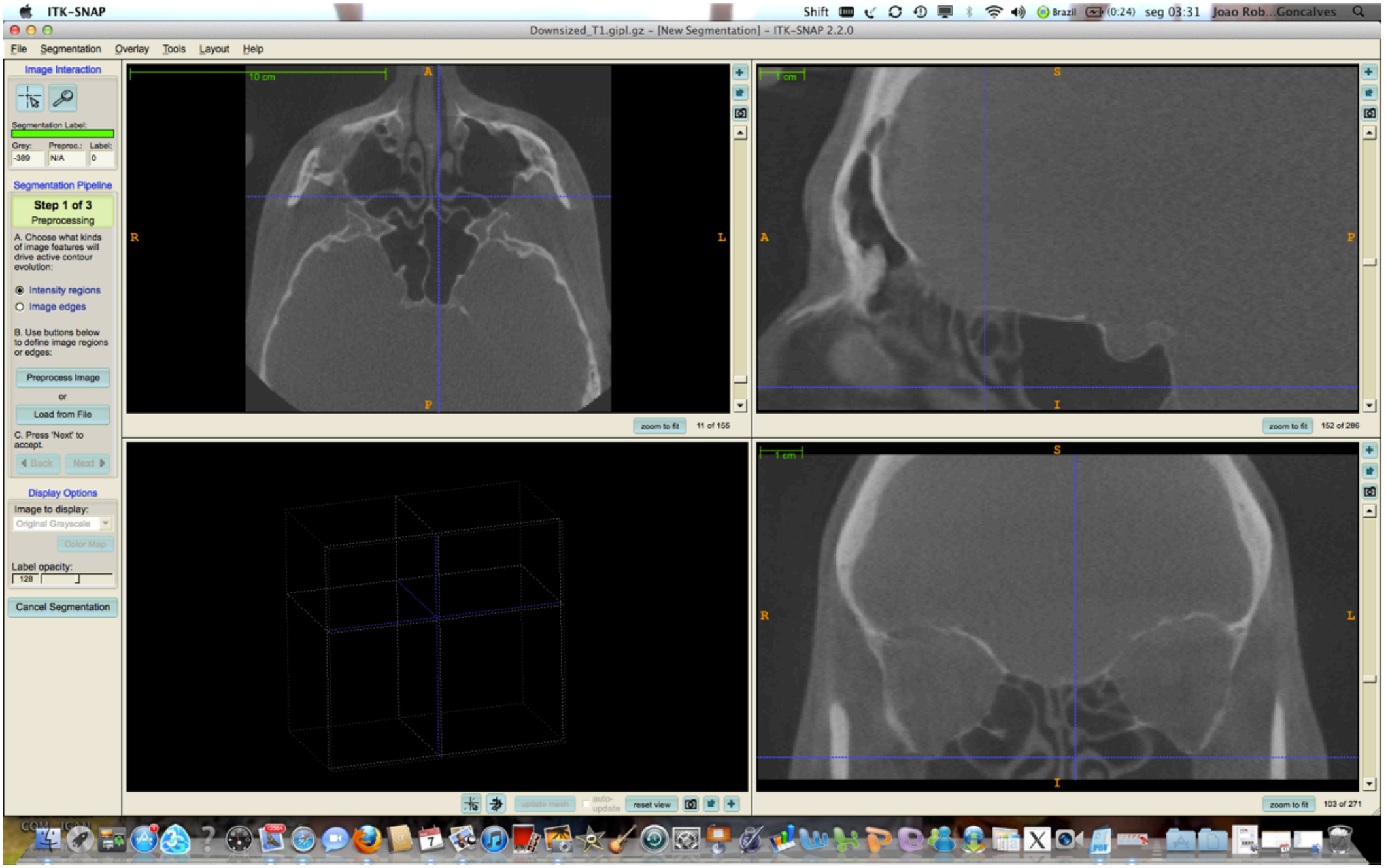
# Semi-automatic Mode

*Segmentation algorithm is used to segment anatomical structures in three dimensions. This algorithm requires some guidance from the user, and ITK-SNAP provides an easy interface to provide such guidance.*


ITK-SNAP
Downsized_T1.gipl.gz - [New Segmentation] - ITK-SNAP 2.2.0
File Segmentation Overlay Tools Layout Help
Main Toolbox
Snake ROI tool: select a region of interest for automatic segmentation
Crosshairs Tool
Intensity: -389
Label: 0
Label description:
Clear Label
Multisession cursor
Segmentation Options
Active drawing label:
Label 2
Draw over:
All labels
Draw inverted
Overall label opacity:
128
Label editor
Undo
Redo
3D Toolbox
10 cm
A
R
L
P
zoom to fit
191 of 381
S
I
201 of 400
accept
update mesh
reset view

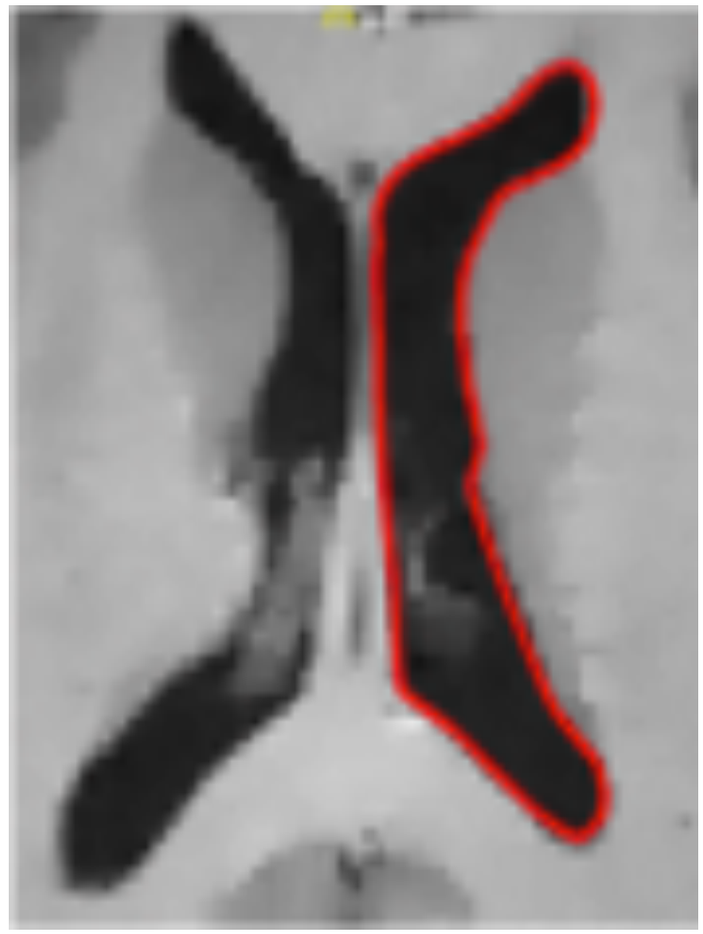

ITK-SNAP
Shift
Brazil
(0:31)
dom 21:33
Joao Rob...Goncalves
Downsized_T1.gipl.gz - [New Segmentation] - ITK-SNAP 2.2.0
File
Segmentation
Overlay
Tools
Layout
Help
Main Toolbox
Tool Options
Snake ROI Tool
Resample ROI
Reset ROI
Segment 3D
Segmentation Options
Active drawing label:
Label 2
Draw over:
All labels
Draw inverted
Overall label opacity:
128
Label editor
Undo
Redo
3D Toolbox
10 cm
A
R
L
P
zoom to fit
191 of 381
S
I
201 of 400
accept
update mesh
reset view


ITK-SNAP
Shift
Brazil
(0:31)
dom 21:34
Joao Rob...Goncalves
Downsized_T1.gipl.gz - [New Segmentation] - ITK-SNAP 2.2.0
File
Segmentation
Overlay
Tools
Layout
Help
Main Toolbox
Tool Options
Snake ROI Tool
Resample ROI
Reset ROI
Segment 3D
Segmentation Options
Active drawing label:
Label 2
Draw over:
All labels
Draw inverted
Overall label opacity:
128
Label editor
Undo
Redo
3D Toolbox
10 cm
A
R
L
P
zoom to fit
191 of 381
S
I
201 of 400
accept
update mesh
reset view

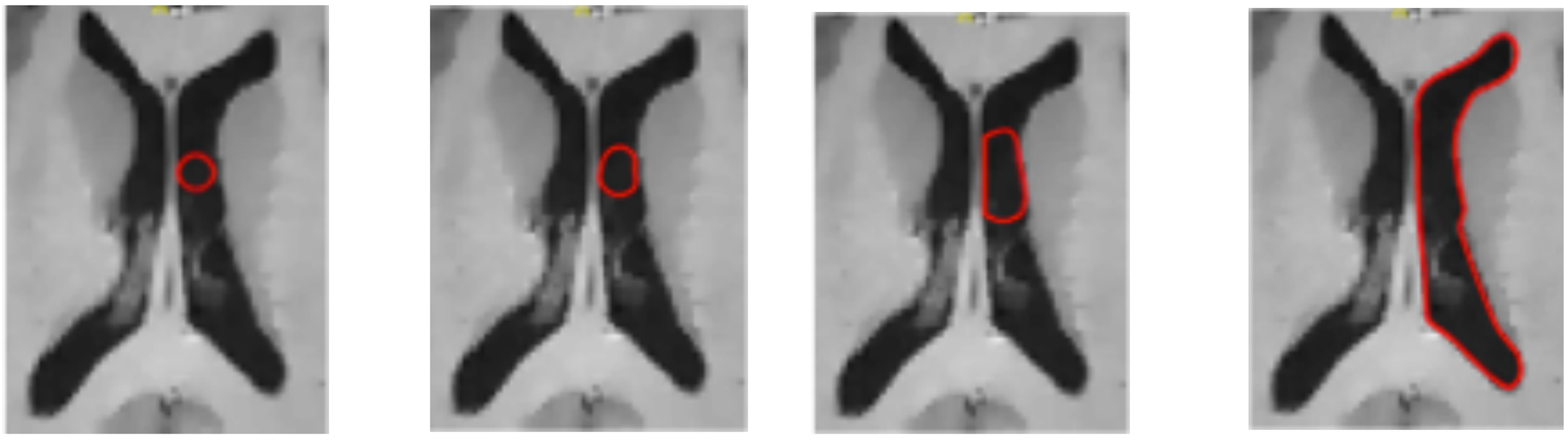

ITK-SNAP
Downsized_T1.gipl.gz - [New Segmentation] - ITK-SNAP 2.2.0
File Segmentation Overlay Tools Layout Help
Image Interaction
Segmentation Label:
Grey: Preproc.: Label:
-389 N/A 0
Segmentation Pipeline
Step 1 of 3
Preprocessing
A. Choose what kinds of image features will drive active contour evolution:
Intensity regions
Image edges
B. Use buttons below to define image regions or edges:
Preprocess Image
or
Load from File
C. Press 'Next' to accept.
Back
Next
Display Options
Image to display:
Original Grayscale
Color Map
Label opacity:
128
Cancel Segmentation
10 cm
A
R
L
P
zoom to fit
11 of 155
1 cm
S
A
P
I
zoom to fit
152 of 286
1 cm
S
R
L
I
update mesh
auto-update
reset view
zoom to fit
103 of 271

# Snake Evolution

The methodology behind SNAP is called snake evolution. The term snake is used to refer to a closed curve (or surface in 3D) that represents a segmentation.



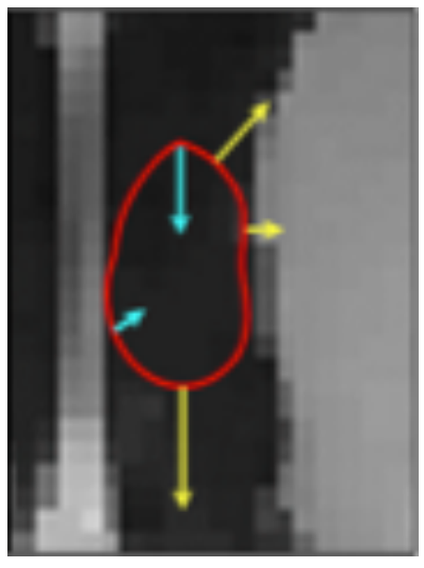
*In snake evolution methods, the snake evolves from a very rough estimate of the anatomical structure of interest to a very close approximation of the structure*

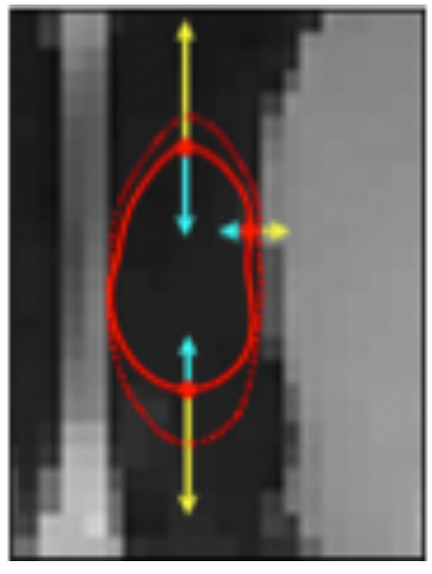


# How?

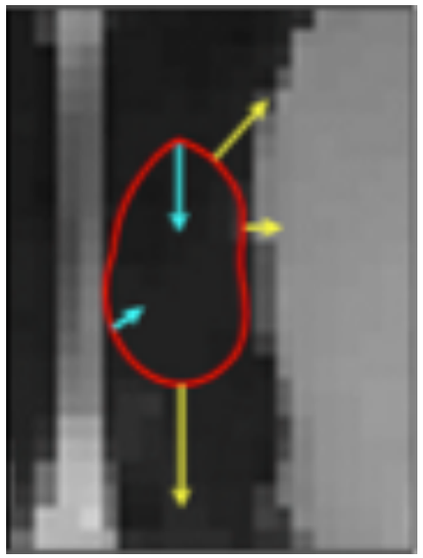
*The snake evolution is governed by a mathematical equation that describes the velocity of every point on the snake at any particular time. The velocity of each point depends on two factors:*

1. *The shape of the snake*
2. *The intensity of the image in the neighborhood of the point*

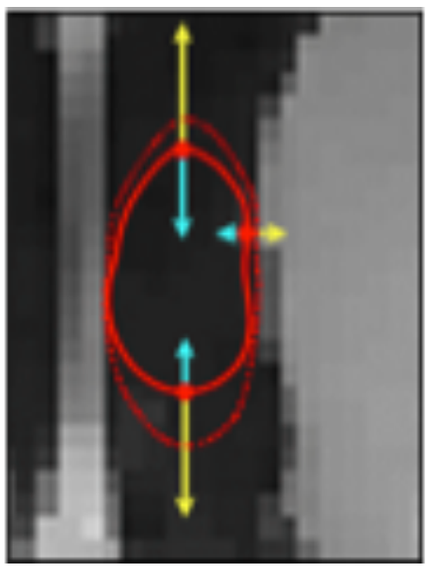




# Vectors of eveolution



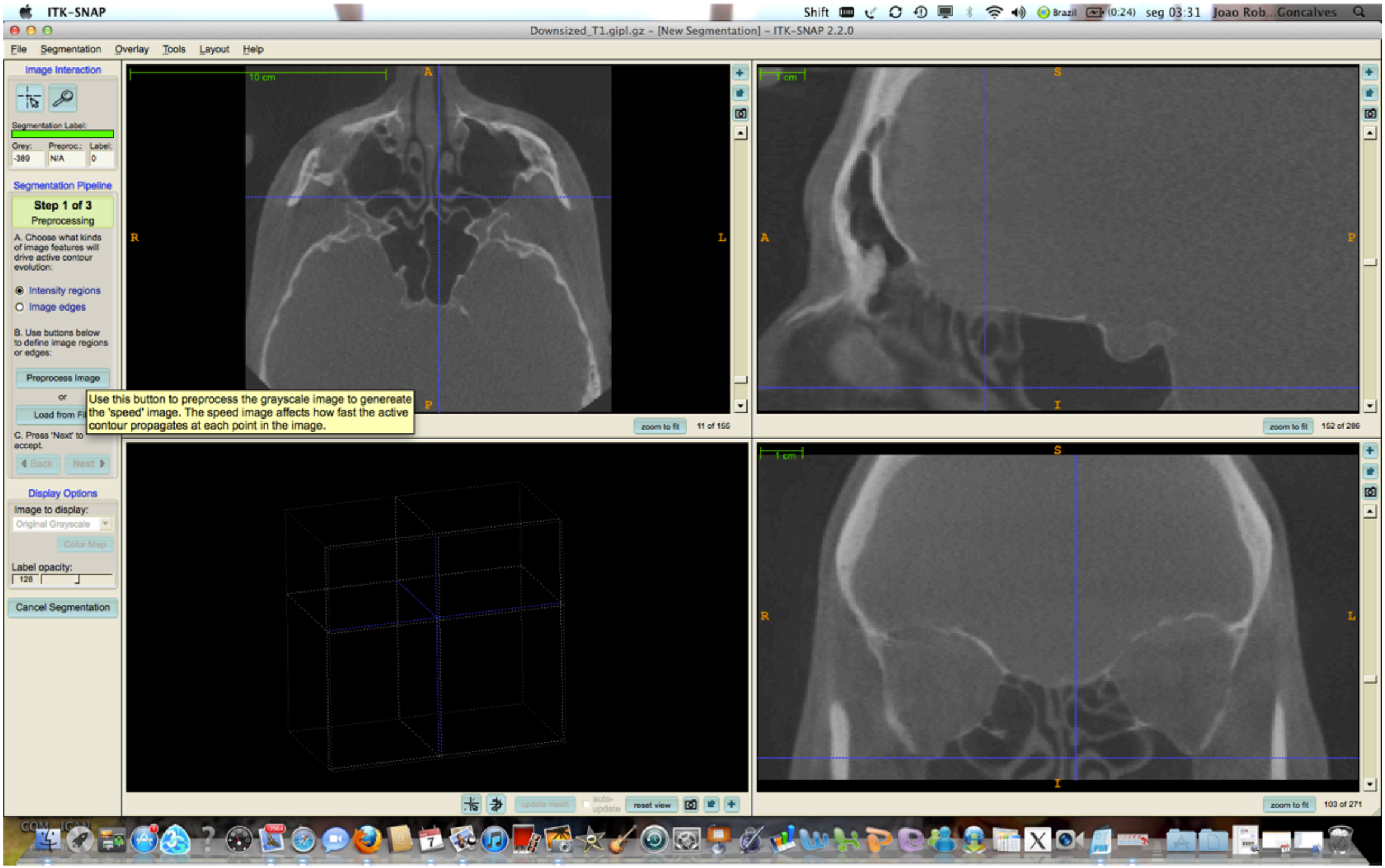
*The yellow velocities depend on image properties: they are stronger in the regions of the image where the intensity is homogeneous and weaker where there are edges (discontinuities) in image intensity*

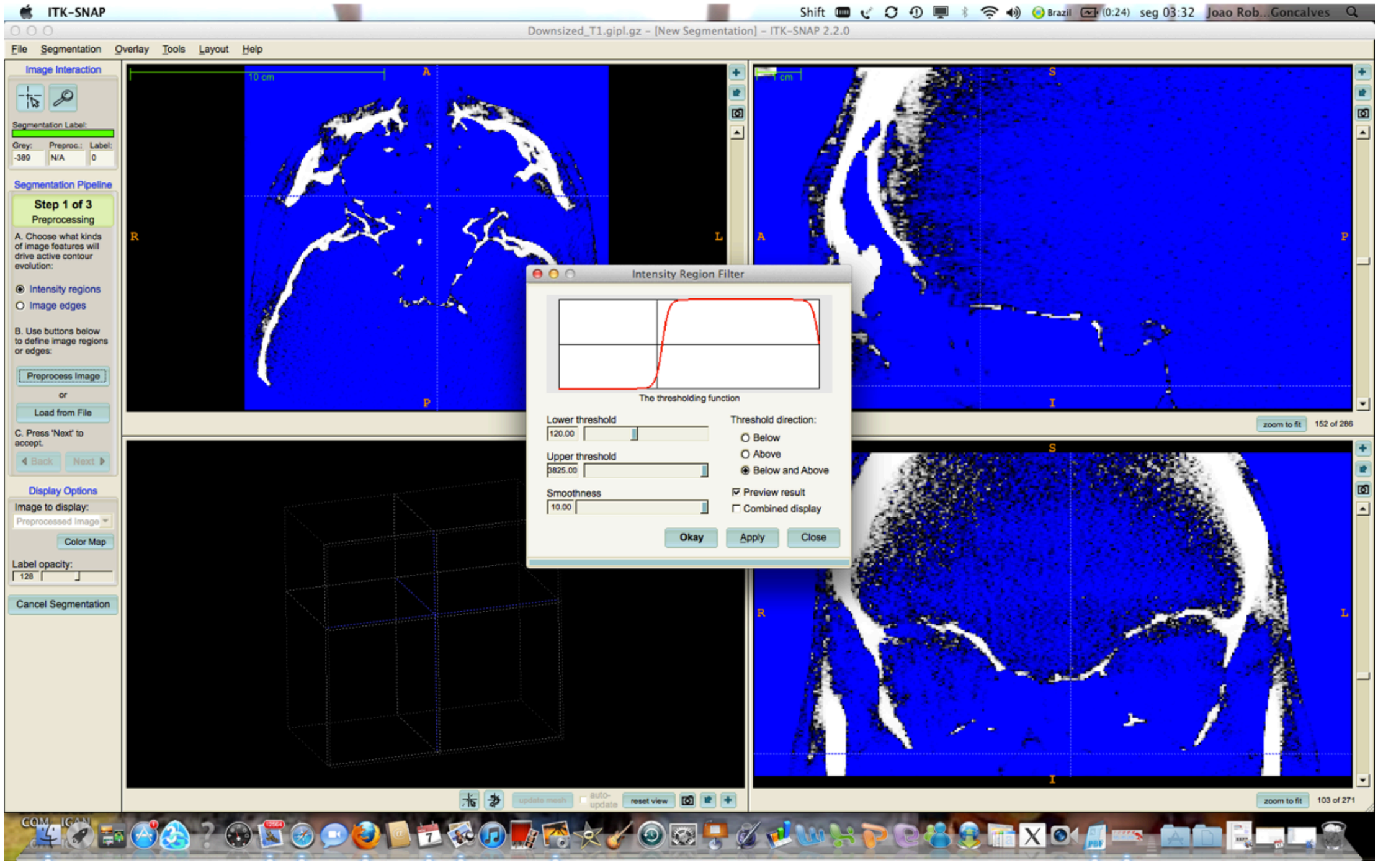


*The blue velocities depend on the shape of the snake: they are longer at points where the snake is more curved and shorter where the snake is more straight.*

Two distinct ways to compute feature images:

1. *The first causes the snake to slow down near edges, or discontinuities, of intensity.*
2. *The second causes the snake to attract to boundaries of regions of uniform intensity.*


ITK-SNAP
Downsized_T1.gipl.gz - [New Segmentation] - ITK-SNAP 2.2.0
File Segmentation Overlay Tools Layout Help
Image Interaction
Segmentation Label:
Grey: Preproc.: Label:
-389 N/A 0
Segmentation Pipeline
Step 1 of 3
Preprocessing
A. Choose what kinds of image features will drive active contour evolution:
Intensity regions
Image edges
B. Use buttons below to define image regions or edges:
Preprocess Image
or
Load from Fi
C. Press 'Next' to accept.
Back Next
Display Options
Image to display:
Original Grayscale
Color Map
Label opacity:
128
Cancel Segmentation
Use this button to preprocess the grayscale image to genereate the 'speed' image. The speed image affects how fast the active contour propagates at each point in the image.
10 cm
A
R
L
P
zoom to fit
11 of 155
1 cm
S
A
P
I
zoom to fit
152 of 286
1 cm
S
R
L
I
update mesh
auto-update
reset view
zoom to fit
103 of 271


ITK-SNAP
Downsized_T1.gipl.gz - [New Segmentation] - ITK-SNAP 2.2.0
File Segmentation Overlay Tools Layout Help
Image Interaction
Segmentation Label:
Grey: -389
Preproc.: N/A
Label: 0
Segmentation Pipeline
Step 1 of 3
Preprocessing
A. Choose what kinds of image features will drive active contour evolution:
Intensity regions
Image edges
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Preprocess Image
or
Load from File
C. Press 'Next' to accept.
Back
Next
Display Options
Image to display:
Preprocessed Image
Color Map
Label opacity:
128
Cancel Segmentation
Intensity Region Filter
The thresholding function
Lower threshold
120.00
Upper threshold
3825.00
Smoothness
10.00
Threshold direction:
Below
Above
Below and Above
Preview result
Combined display
Okay
Apply
Close
10 cm
A
R
L
P
S
I
zoom to fit
152 of 286
update mesh
auto-update
reset view
zoom to fit
103 of 271

ITK-SNAP

Shift Brazil (0:24) seg 03:32 Joao Rob...Goncalves

Downsized_T1.gipl.gz - [New Segmentation] - ITK-SNAP 2.2.0

File Segmentation Overlay Tools Layout Help

**Image Interaction**

Segmentation Label:

| Grey: | Preproc.: | Label: |
|---|---|---|
| -389 | N/A | 0 |

**Segmentation Pipeline**

**Step 1 of 3**
Preprocessing

A. Choose what kinds of image features will drive active contour evolution:

- (•) Intensity regions
- ( ) Image edges

B. Use buttons below to define image regions or edges:

Preprocess Image

or

Load from File

C. Press 'Next' to accept.

Back Next

**Display Options**

Image to display: Preprocessed Image

Color Map

Label opacity: 128

Cancel Segmentation

10 cm

A

R

L

P

S

A

P

I

zoom to fit 152 of 286

**Intensity Region Filter**

The thresholding function

Lower threshold: 120.00

Upper threshold: 3825.00

Smoothness: 10.00

Threshold direction:

- ( ) Below
- ( ) Above
- (•) Below and Above

☑ Preview result

☑ Combined display

Okay Apply Close

update mesh auto-update reset view

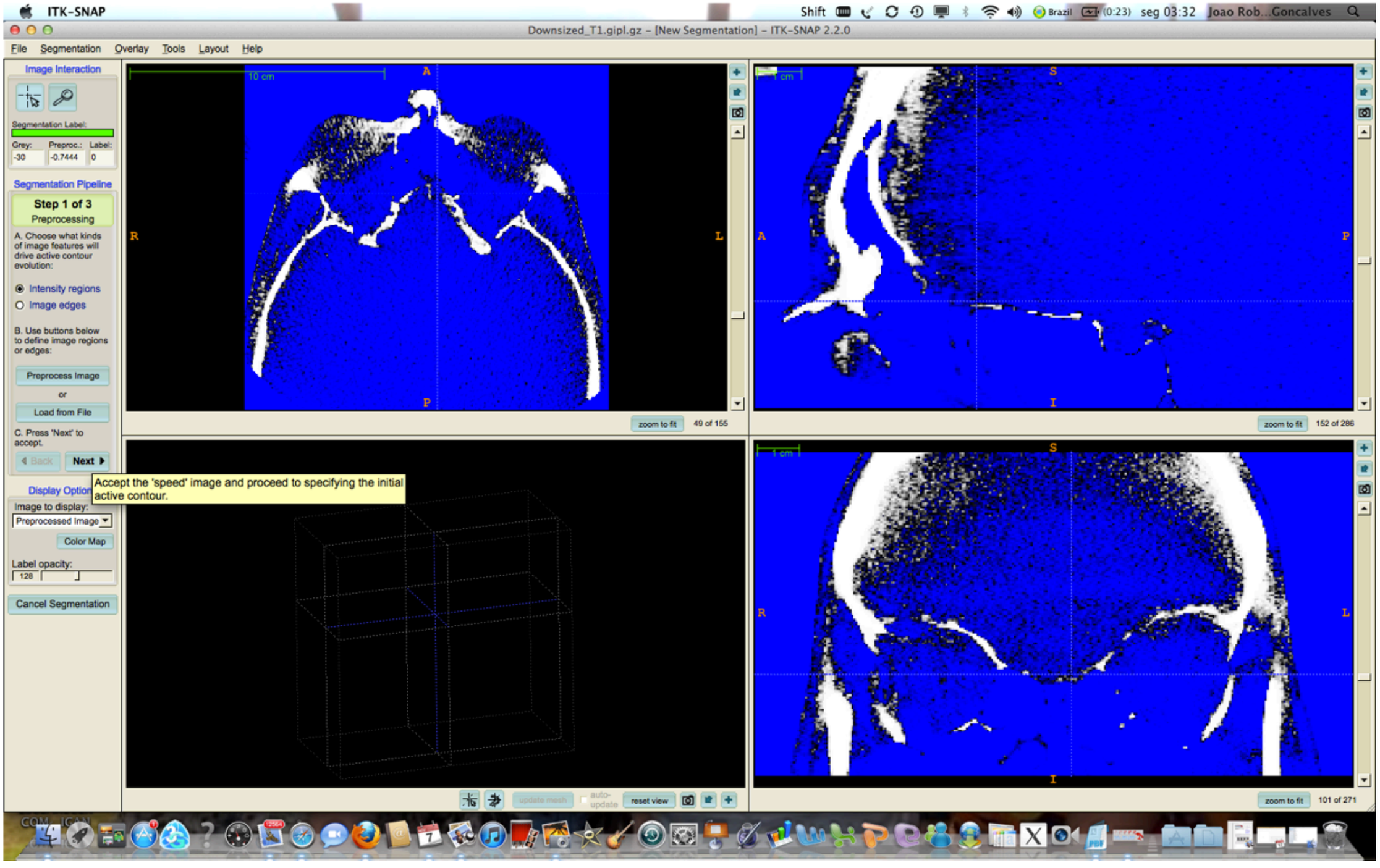
S

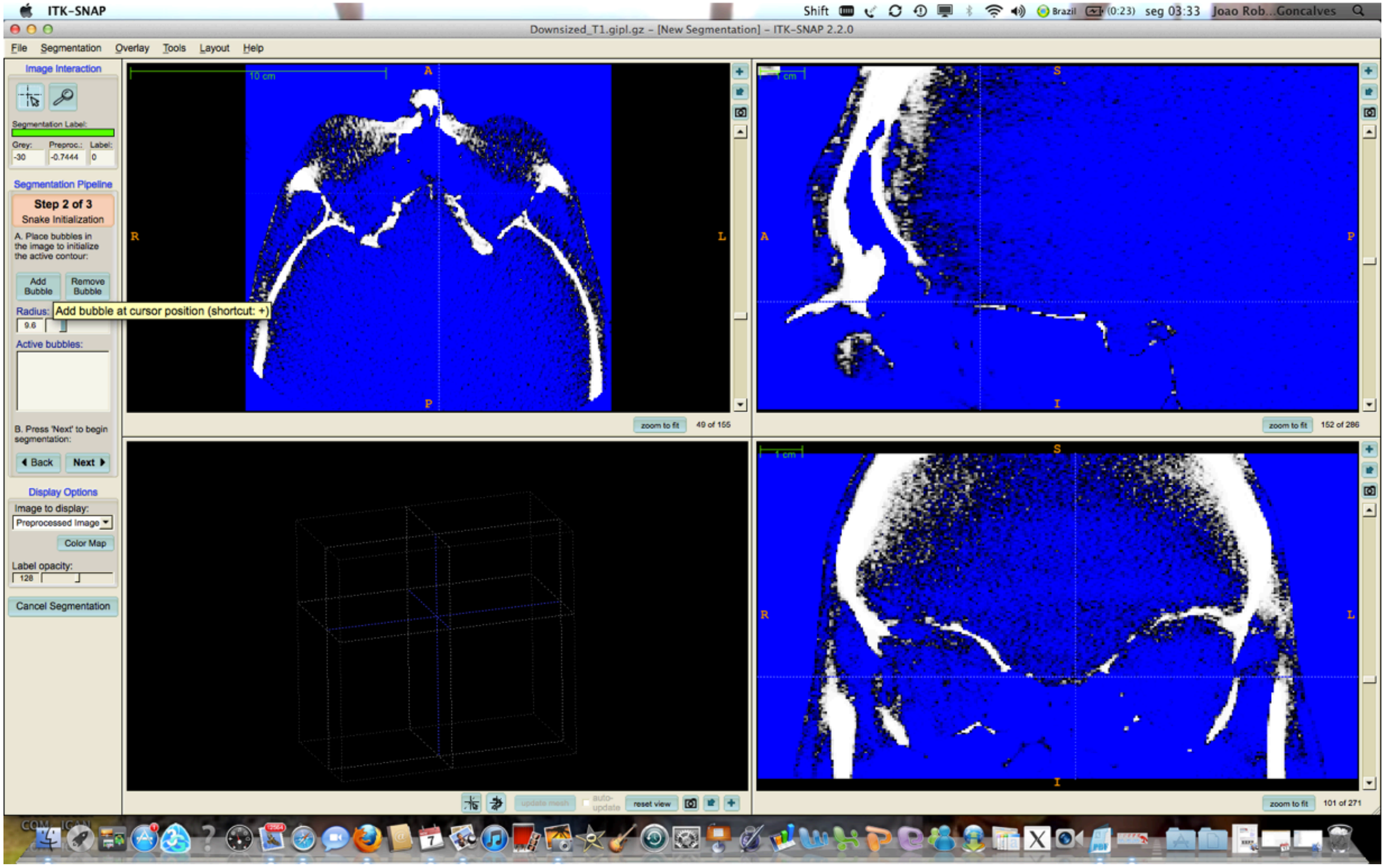
R

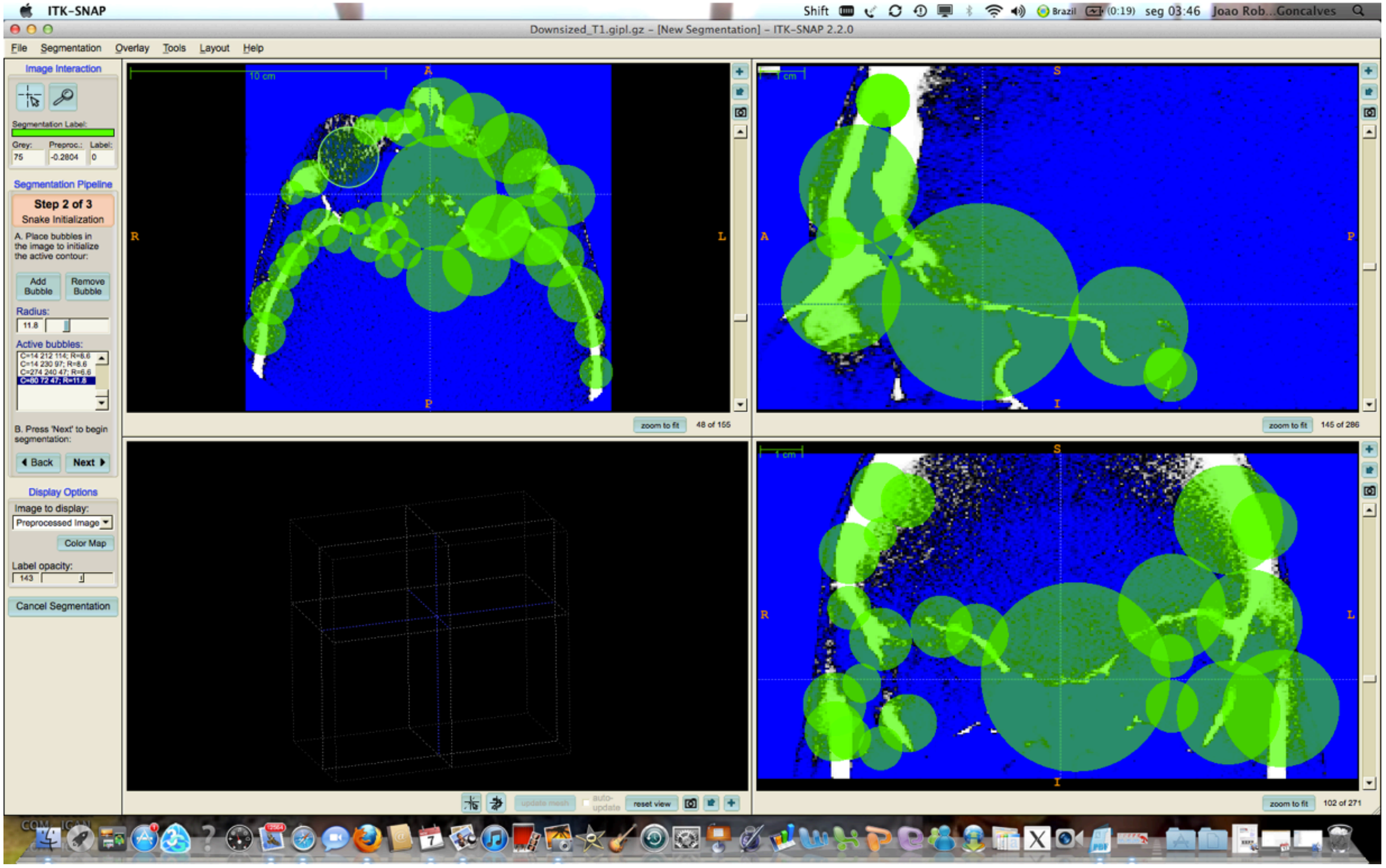
L

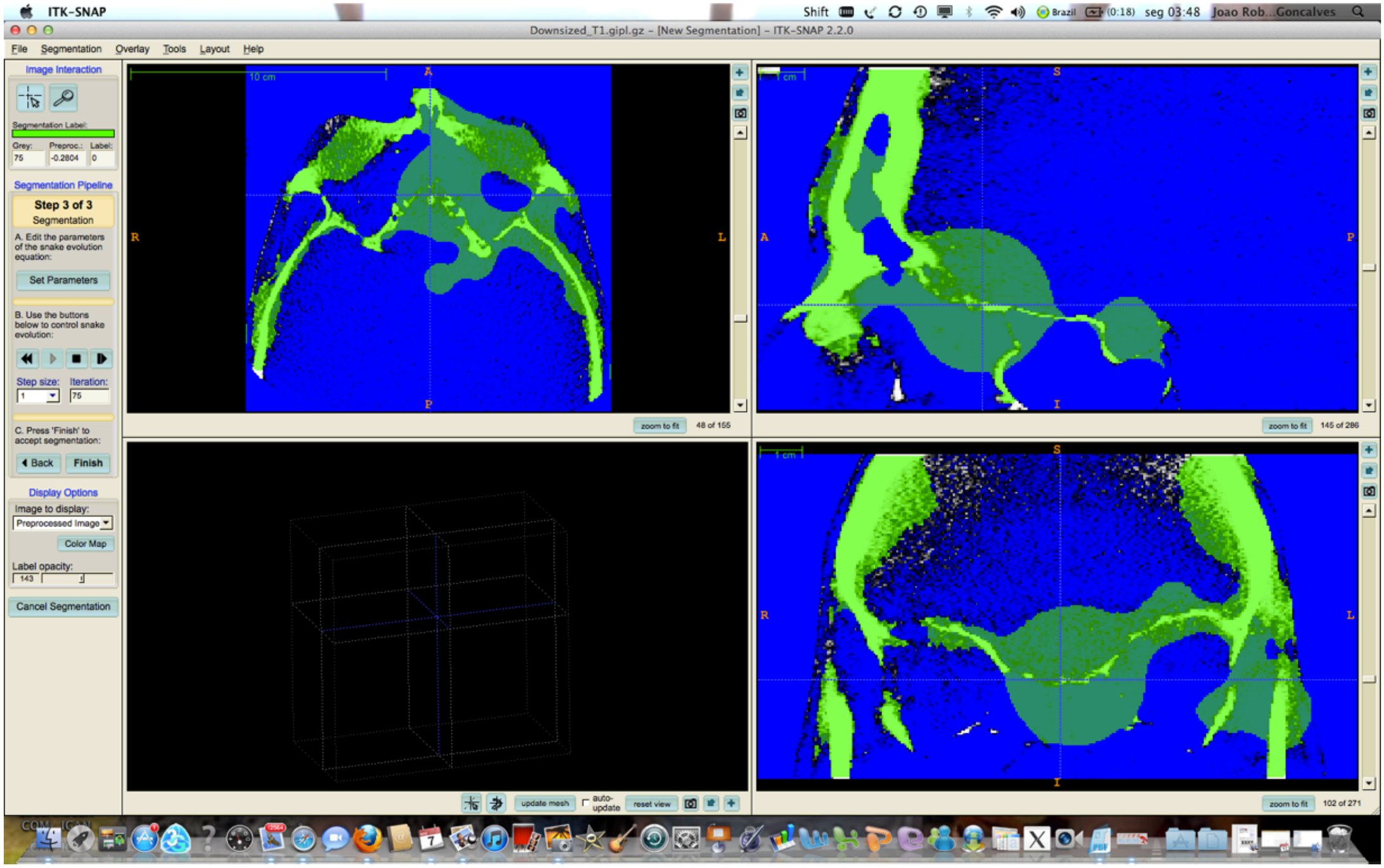
I

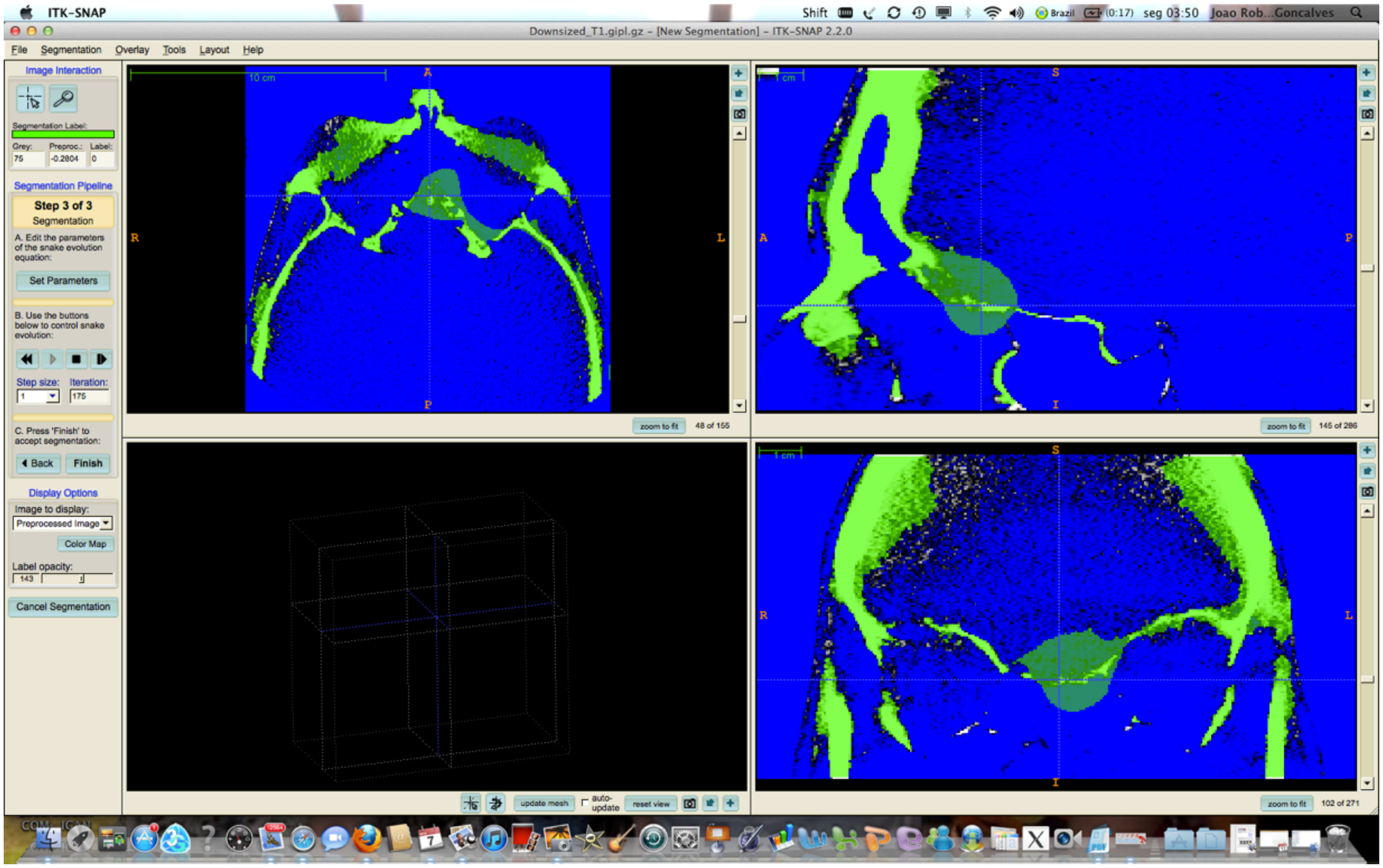
zoom to fit 103 of 271

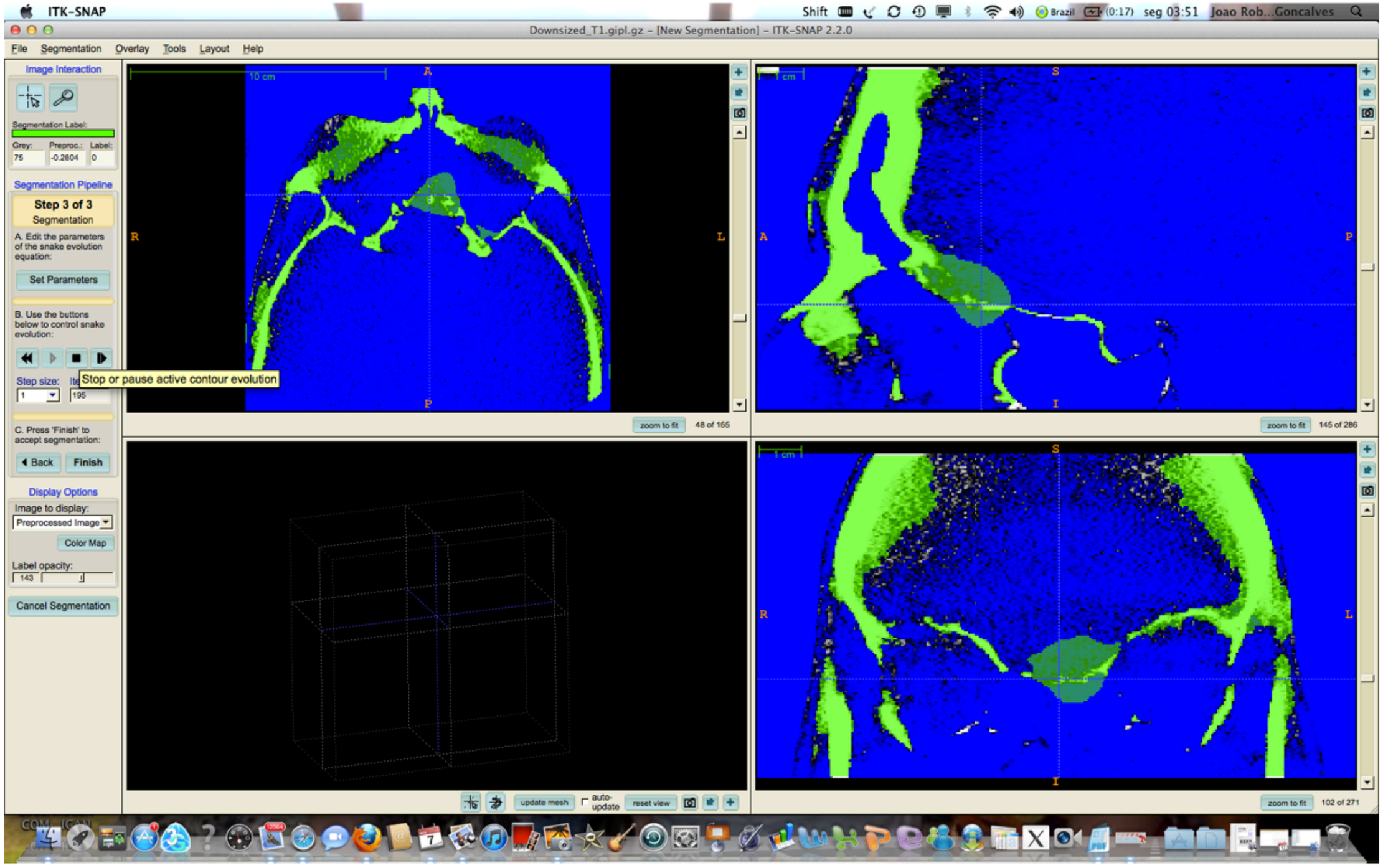

ITK-SNAP
Downsized_T1.gipl.gz - [New Segmentation] - ITK-SNAP 2.2.0
File Segmentation Overlay Tools Layout Help
Image Interaction
Segmentation Label:
Grey: Preproc.: Label:
-30 -0.7444 0
Segmentation Pipeline
Step 1 of 3
Preprocessing
A. Choose what kinds of image features will drive active contour evolution:
Intensity regions
Image edges
B. Use buttons below to define image regions or edges:
Preprocess Image
or
Load from File
C. Press 'Next' to accept.
Back
Next
Accept the 'speed' image and proceed to specifying the initial active contour.
Display Option
Image to display:
Preprocessed Image
Color Map
Label opacity:
128
Cancel Segmentation
10 cm
A
R
L
P
zoom to fit
49 of 155
1 cm
S
A
P
I
zoom to fit
152 of 286
1 cm
S
R
L
I
zoom to fit
101 of 271
update mesh
auto-update
reset view


ITK-SNAP
Downsized_T1.gipl.gz – [New Segmentation] – ITK-SNAP 2.2.0
File Segmentation Overlay Tools Layout Help
Image Interaction
Segmentation Label:
Grey: Preproc.: Label:
-30 -0.7444 0
Segmentation Pipeline
Step 2 of 3
Snake Initialization
A. Place bubbles in the image to initialize the active contour:
Add Bubble
Remove Bubble
Radius:
Add bubble at cursor position (shortcut: +)
9.6
Active bubbles:
B. Press 'Next' to begin segmentation:
Back
Next
Display Options
Image to display:
Preprocessed Image
Color Map
Label opacity:
120
Cancel Segmentation
10 cm
A
R
L
P
zoom to fit
49 of 155
1 cm
S
A
P
I
zoom to fit
152 of 286
update mesh
auto-update
reset view
1 cm
S
R
L
I
zoom to fit
101 of 271


ITK-SNAP
Shift
Brazil
(0:19)
seg 03:46
Joao Rob...Goncalves
Downsized_T1.gipl.gz - [New Segmentation] - ITK-SNAP 2.2.0
File
Segmentation
Overlay
Tools
Layout
Help
Image Interaction
Segmentation Label:
Grey:
Preproc.:
Label:
75
-0.2804
0
Segmentation Pipeline
Step 2 of 3
Snake Initialization
A. Place bubbles in the image to initialize the active contour:
Add Bubble
Remove Bubble
Radius:
11.8
Active bubbles:
C=14 212 114; R=8.6
C=14 230 97; R=8.6
C=274 240 47; R=8.6
C=60 72 47; R=11.8
B. Press 'Next' to begin segmentation:
Back
Next
Display Options
Image to display:
Preprocessed Image
Color Map
Label opacity:
143
Cancel Segmentation
10 cm
A
R
L
P
zoom to fit
48 of 155
1 cm
S
A
P
I
zoom to fit
145 of 286
1 cm
S
R
L
I
update mesh
auto-update
reset view
zoom to fit
102 of 271


ITK-SNAP
Shift
Brazil
(0:18)
seg 03:48
Joao Rob...Goncalves
Downsized_T1.gipl.gz - [New Segmentation] - ITK-SNAP 2.2.0
File
Segmentation
Overlay
Tools
Layout
Help
Image Interaction
Segmentation Label:
Grey:
Preproc.:
Label:
75
-0.2804
0
Segmentation Pipeline
Step 3 of 3
Segmentation
A. Edit the parameters of the snake evolution equation:
Set Parameters
B. Use the buttons below to control snake evolution:
Step size:
Iteration:
1
75
C. Press 'Finish' to accept segmentation:
Back
Finish
Display Options
Image to display:
Preprocessed Image
Color Map
Label opacity:
143
Cancel Segmentation
10 cm
A
R
L
P
zoom to fit
48 of 155
cm
S
A
P
I
zoom to fit
145 of 286
1 cm
S
R
L
I
update mesh
auto-update
reset view
zoom to fit
102 of 271

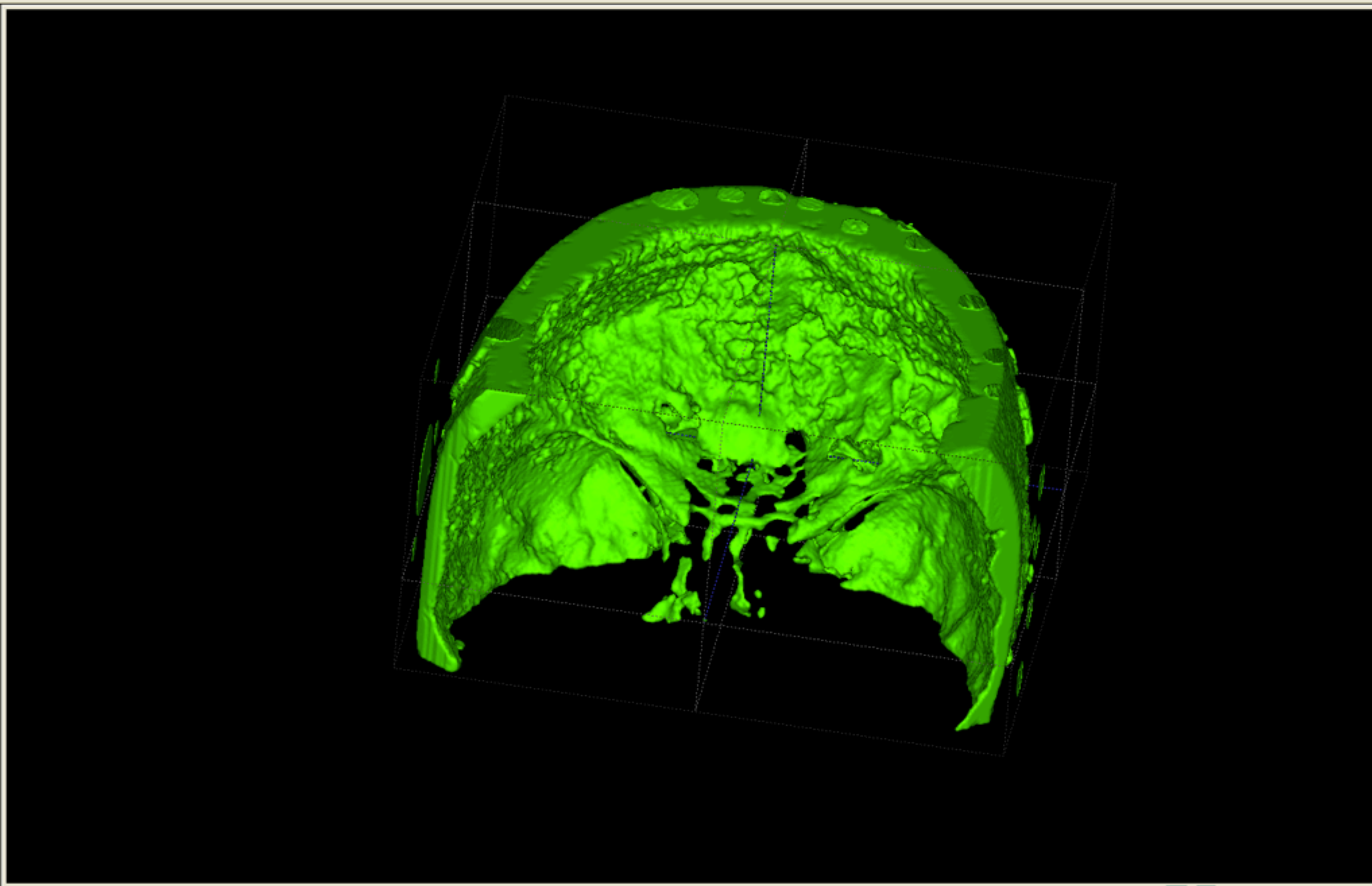

ITK-SNAP
Downsized_T1.gipl.gz - [New Segmentation] - ITK-SNAP 2.2.0
File Segmentation Overlay Tools Layout Help
Image Interaction
Segmentation Label:
Grey: Preproc.: Label:
75 -0.2804 0
Segmentation Pipeline
Step 3 of 3
Segmentation
A. Edit the parameters of the snake evolution equation:
Set Parameters
B. Use the buttons below to control snake evolution:
Step size: Iteration:
1 175
C. Press 'Finish' to accept segmentation:
Back Finish
Display Options
Image to display:
Preprocessed Image
Color Map
Label opacity:
143
Cancel Segmentation
10 cm
A
R
L
P
zoom to fit
48 of 155
1 cm
S
A
P
I
zoom to fit
145 of 286
update mesh
auto-update
reset view
1 cm
S
R
L
I
zoom to fit
102 of 271


ITK-SNAP
Downsized_T1.gipl.gz - [New Segmentation] - ITK-SNAP 2.2.0
File Segmentation Overlay Tools Layout Help
Image Interaction
Segmentation Label:
Grey: Preproc.: Label:
75 -0.2804 0
Segmentation Pipeline
Step 3 of 3
Segmentation
A. Edit the parameters of the snake evolution equation:
Set Parameters
B. Use the buttons below to control snake evolution:
Stop or pause active contour evolution
Step size:
C. Press 'Finish' to accept segmentation:
Back
Finish
Display Options
Image to display:
Preprocessed Image
Color Map
Label opacity:
143
Cancel Segmentation
10 cm
zoom to fit
48 of 155
zoom to fit
145 of 286
update mesh
auto-update
reset view
zoom to fit
102 of 271

Shift Brazil (0:16) seg 03:52 Joao Rob

Downsized_T1.gipl.gz - [New Segmentation] - ITK-SNAP 2.2.0

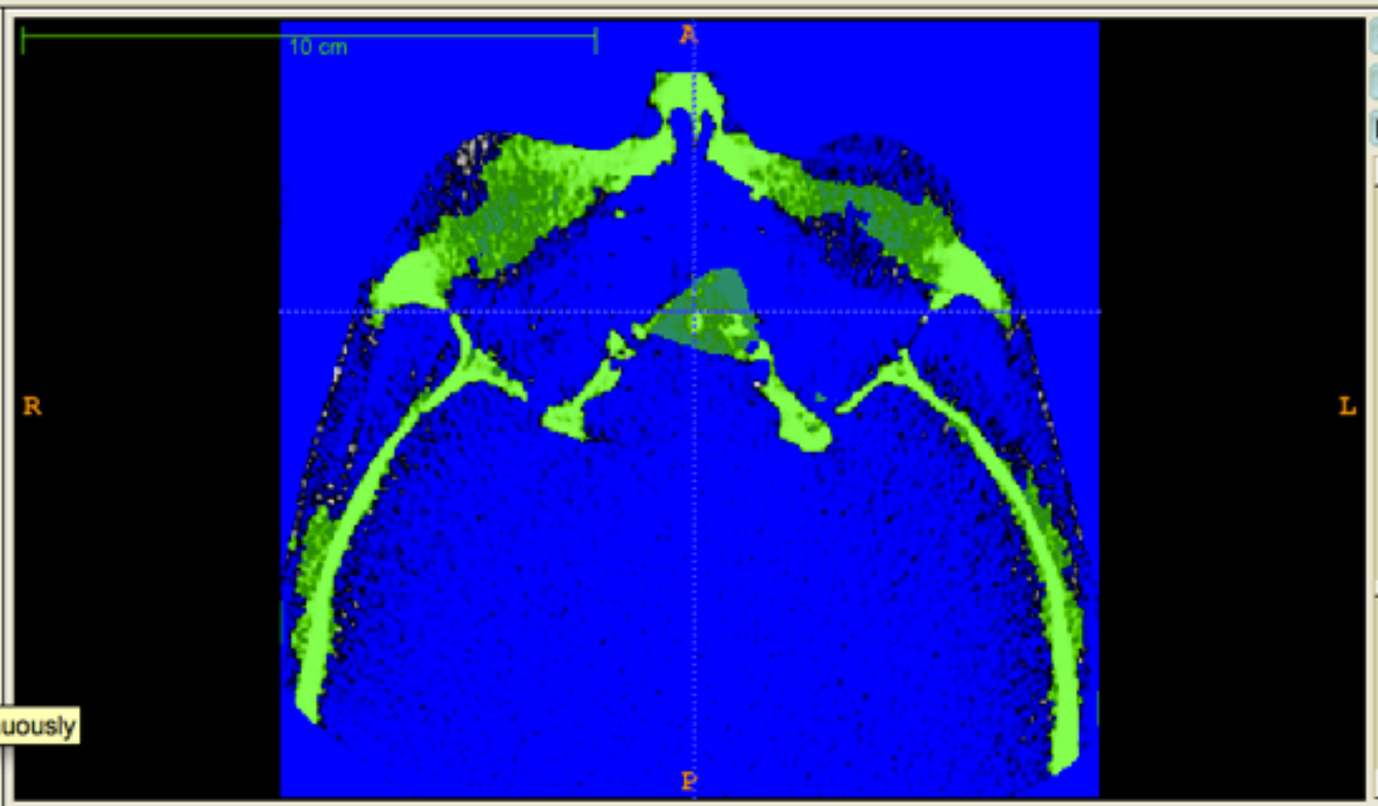
Overlay Tools Layout Help

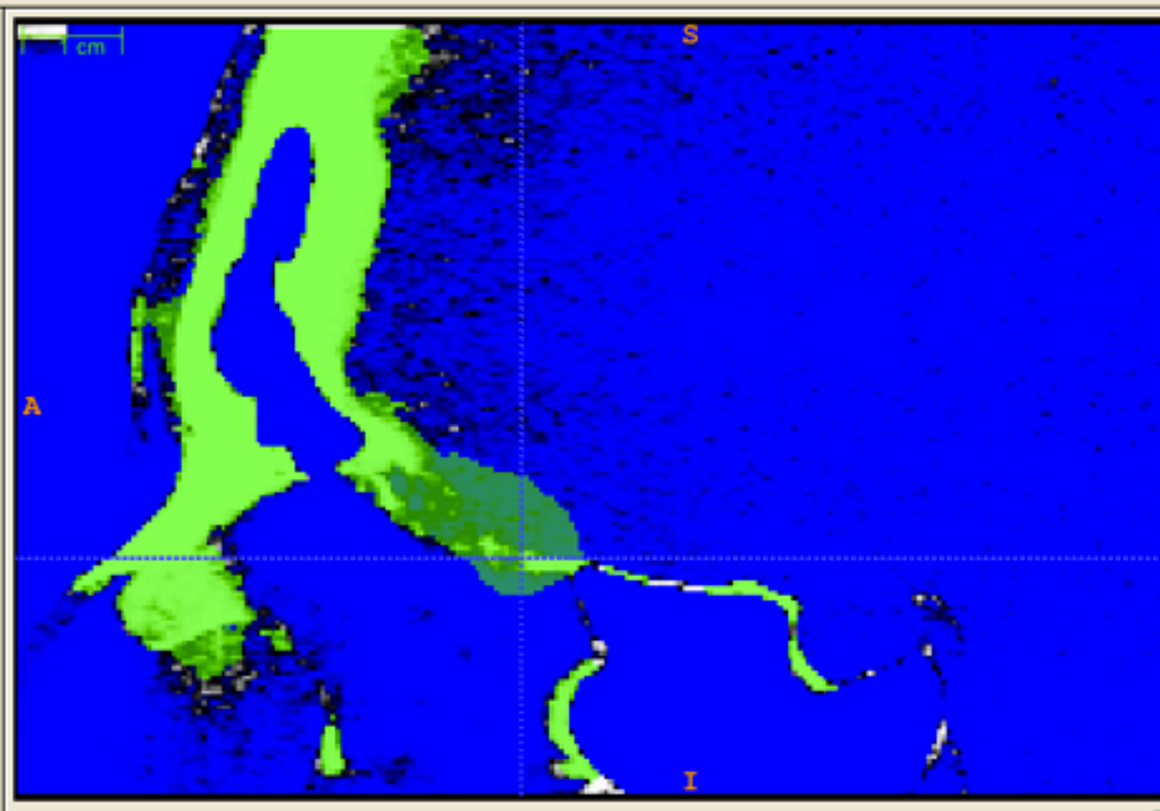


update mesh auto-update

Downsized_T1.gipl.gz - [New Segmentation] - ITK-SNAP 2.2.0

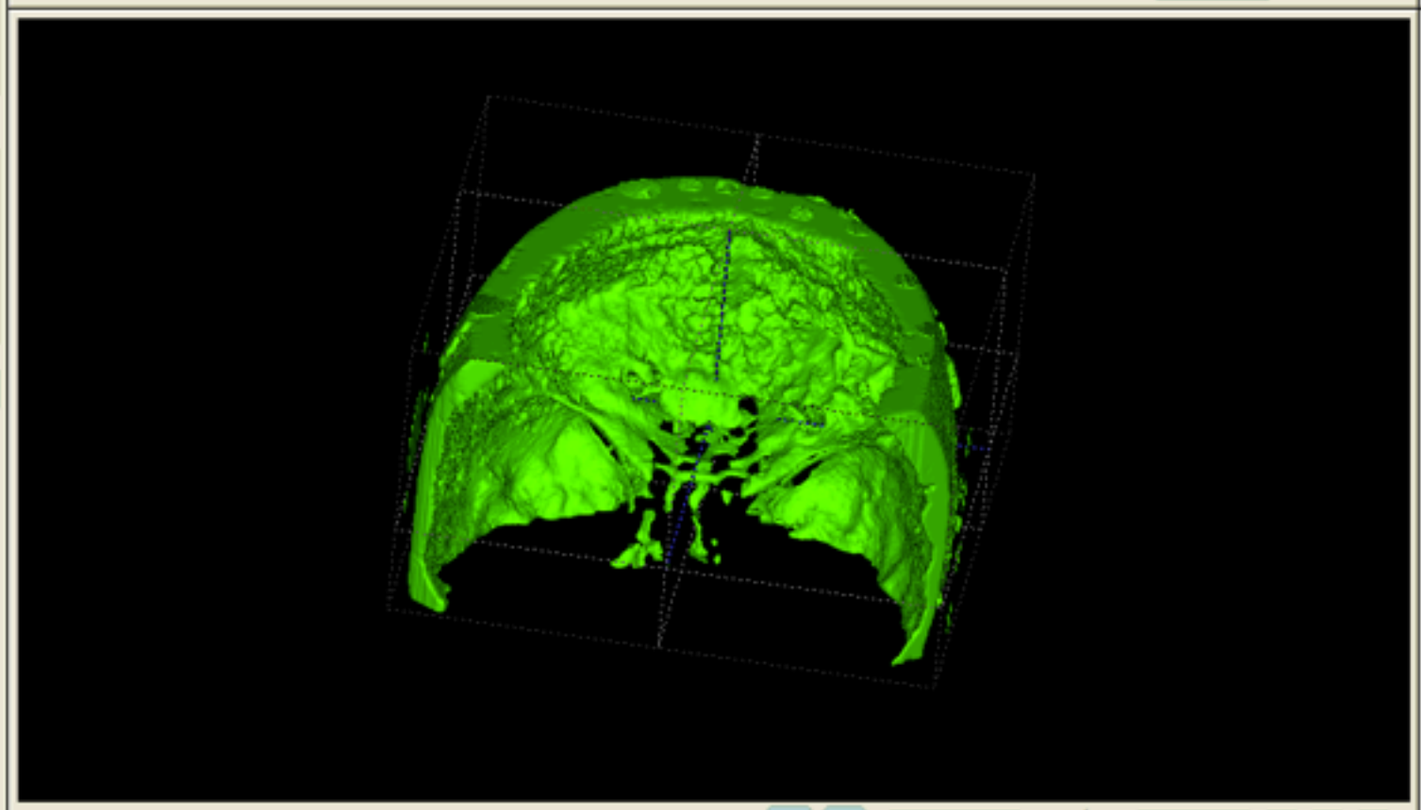
Overlay Tools Layout Help

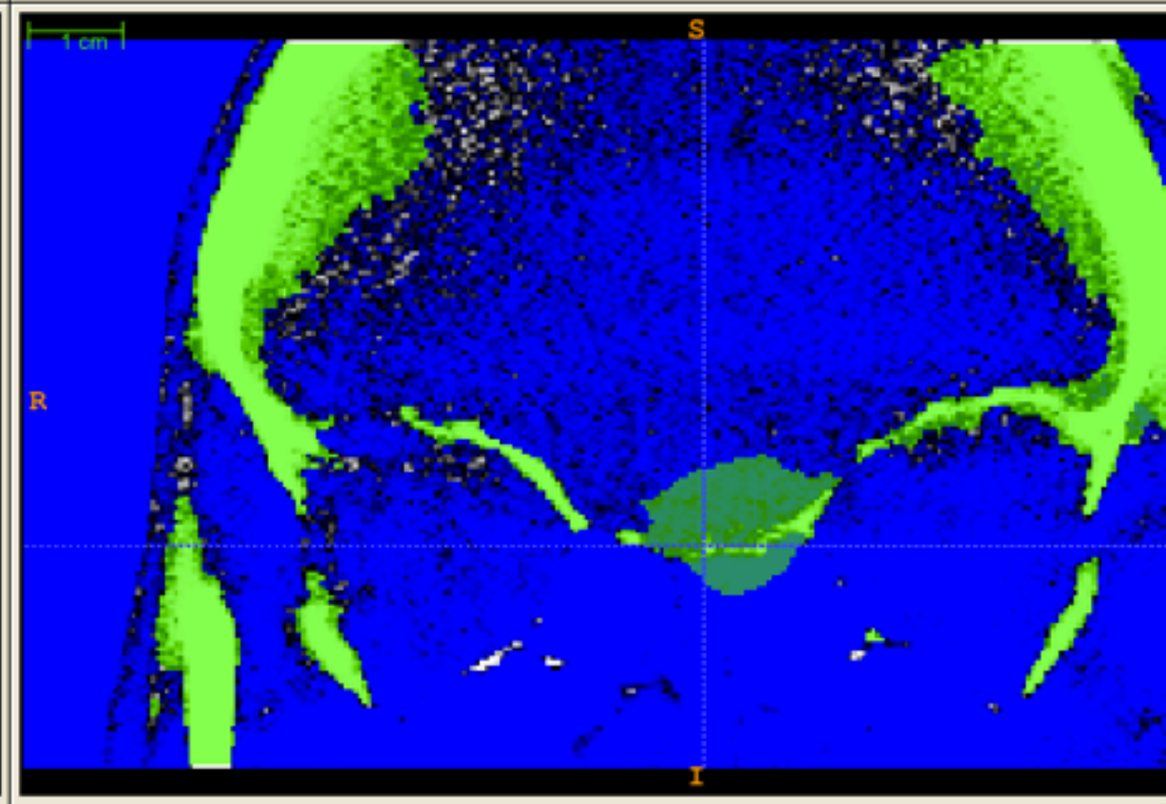



nuously

zoom to fit 48 of 155

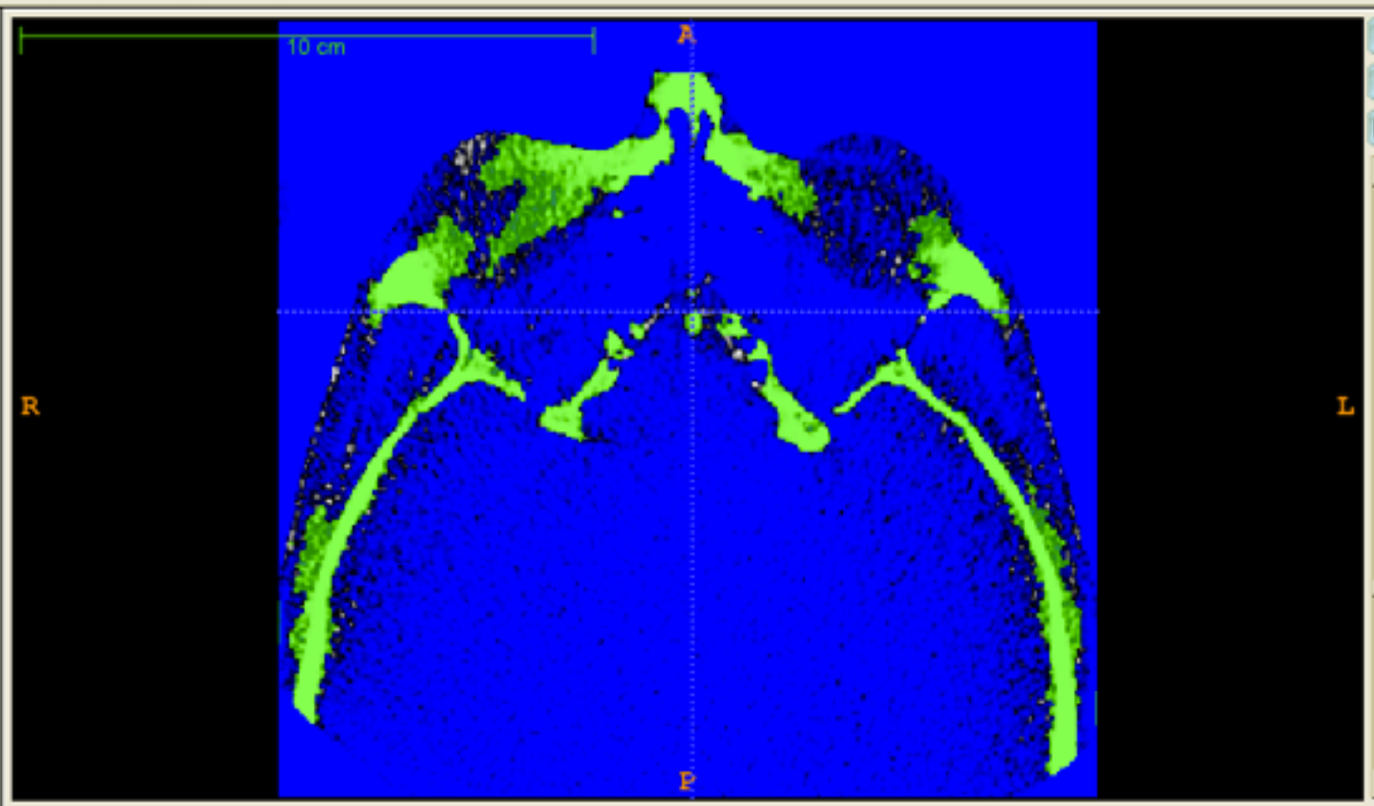


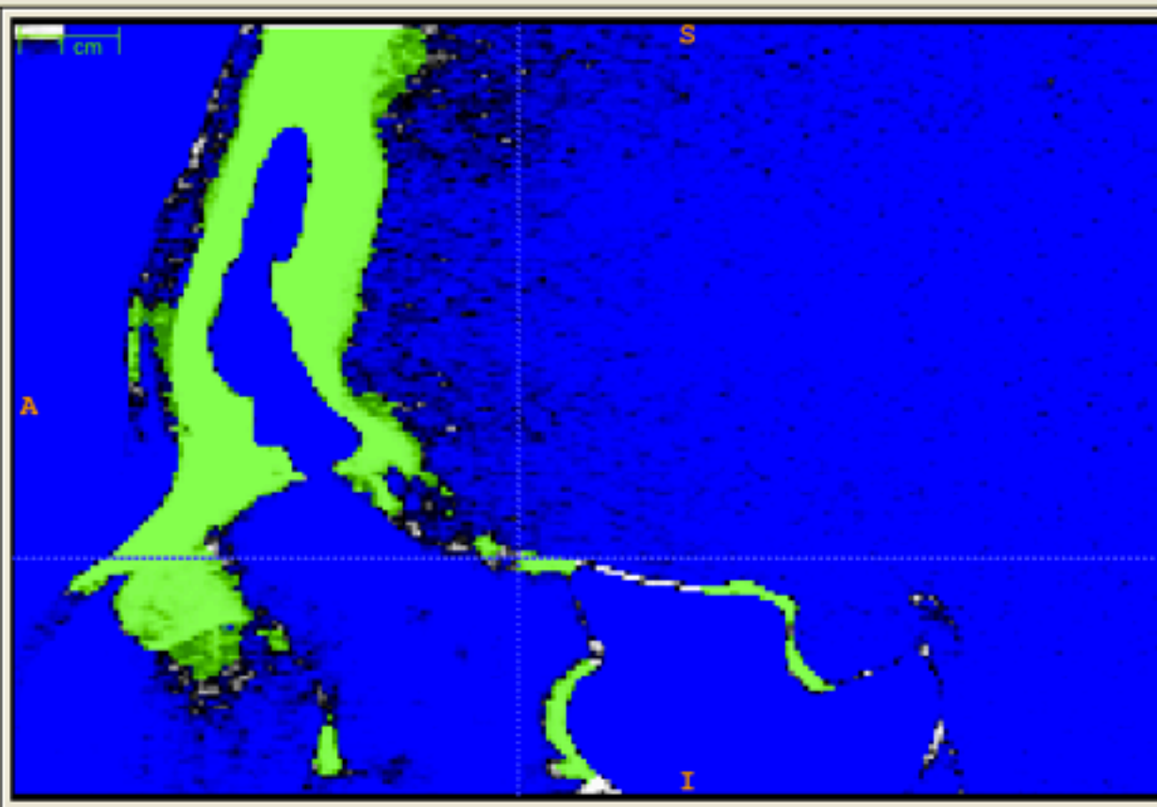



update mesh auto-update reset view

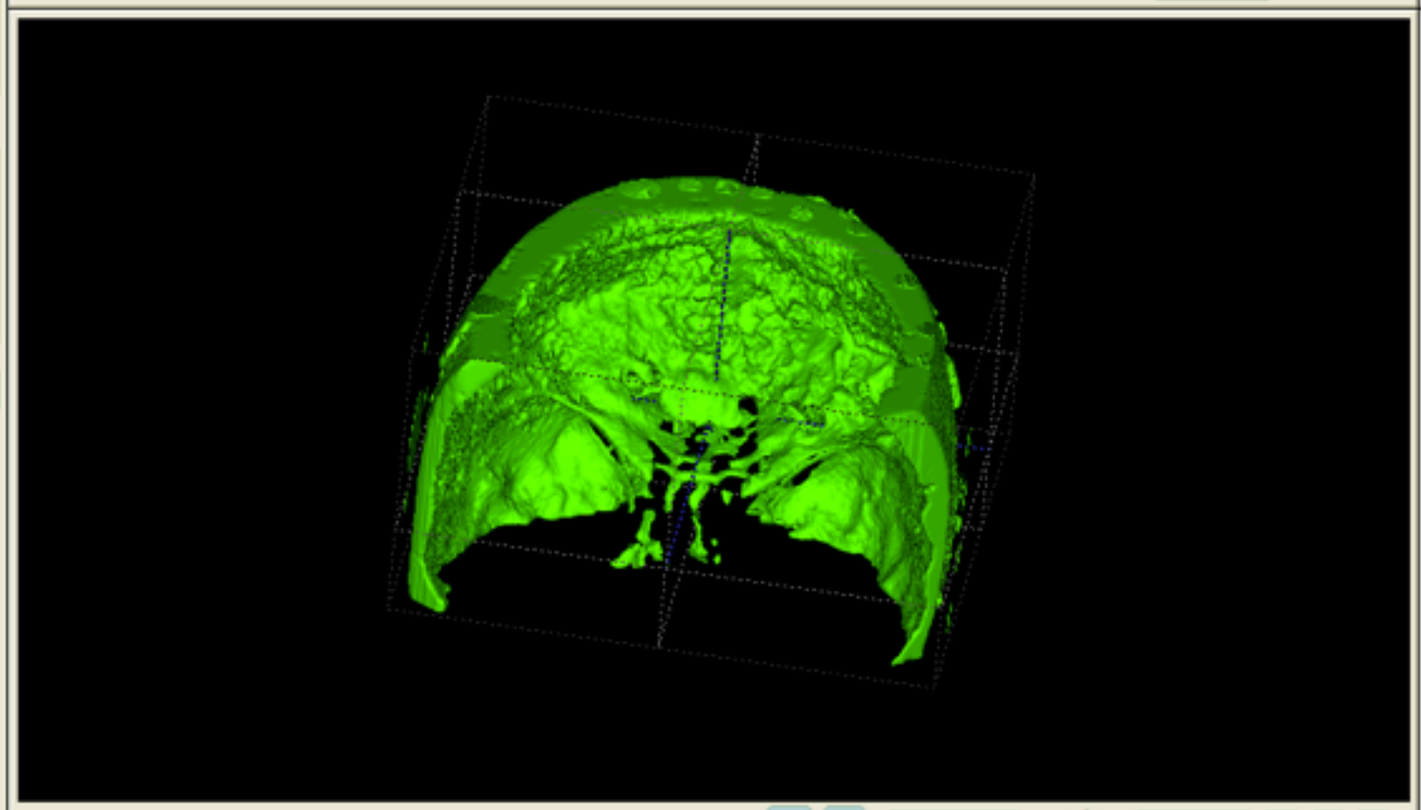
Downsized_T1.gipl.gz - [New Segmentation] - ITK-SNAP 2.2.0

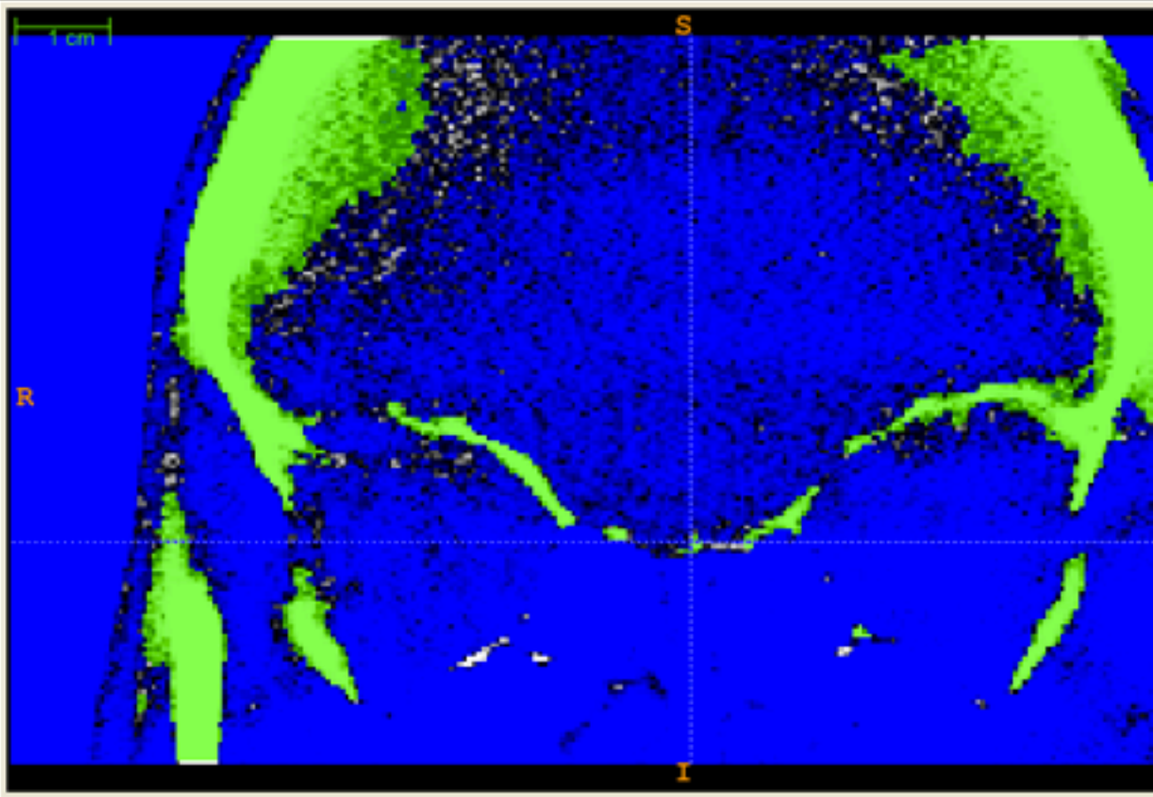
Overlay Tools Layout Help




zoom to fit 48 of 155

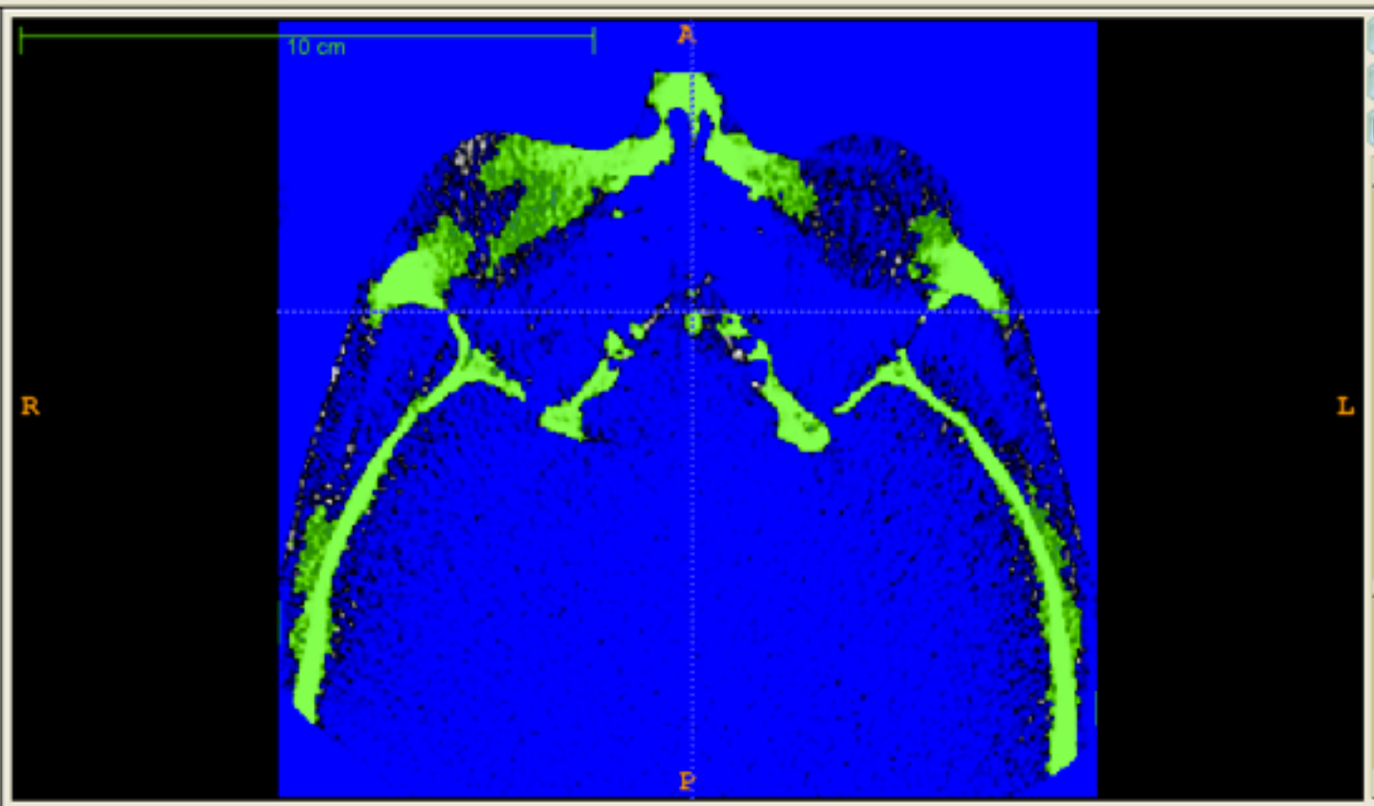


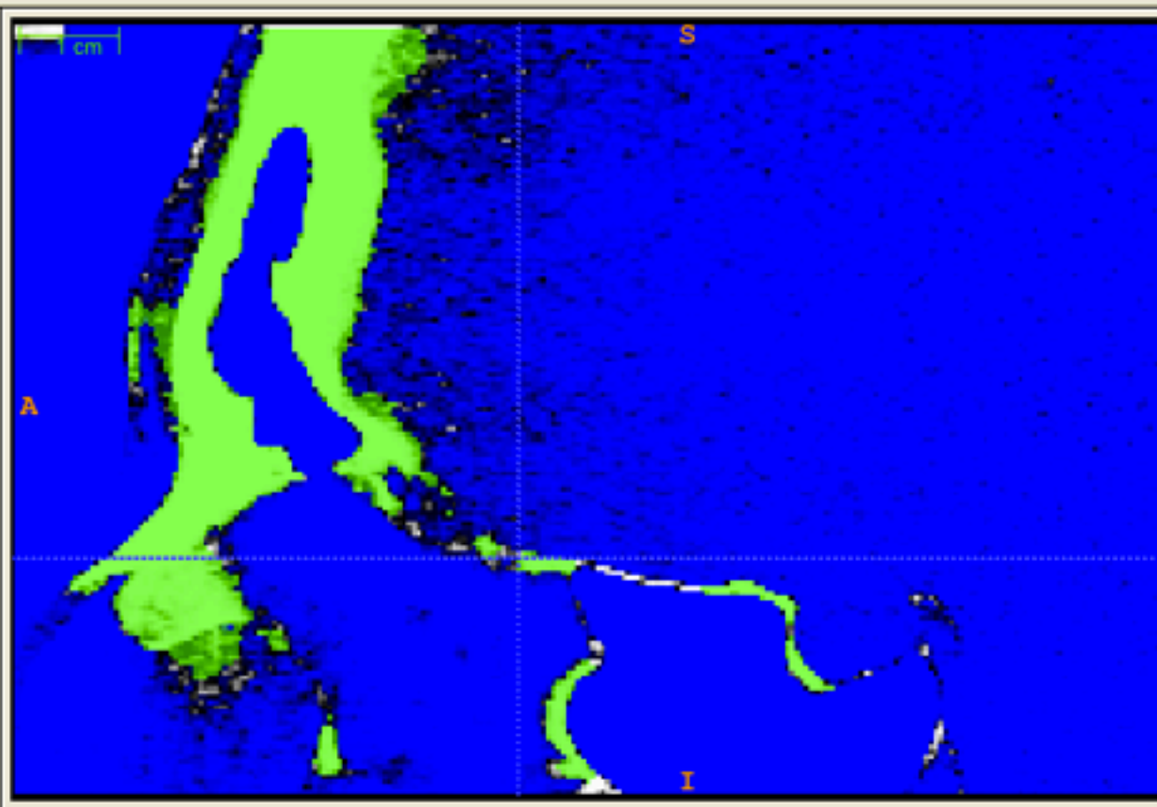



update mesh auto-update reset view

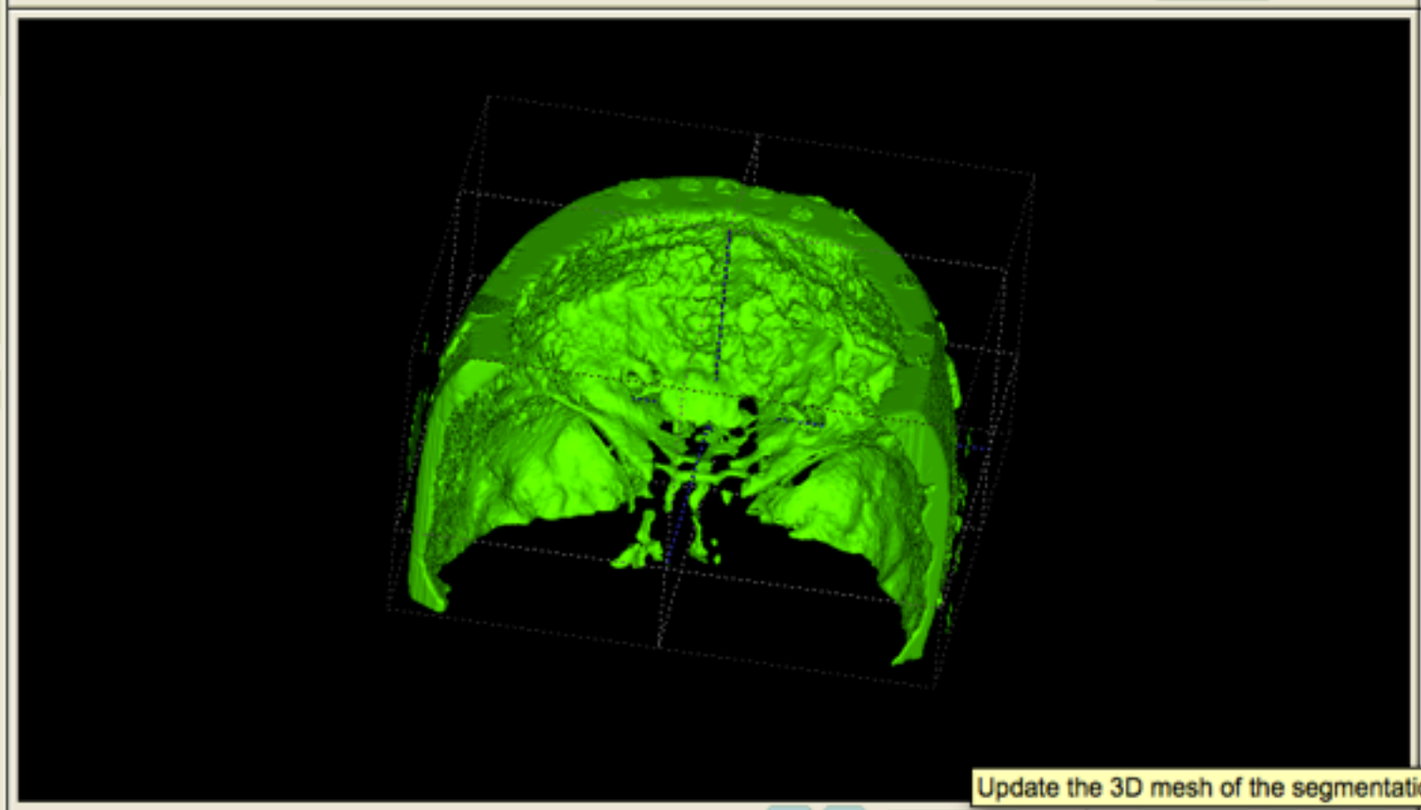
Downsized_T1.gipl.gz - [New Segmentation] - ITK-SNAP 2.2.0

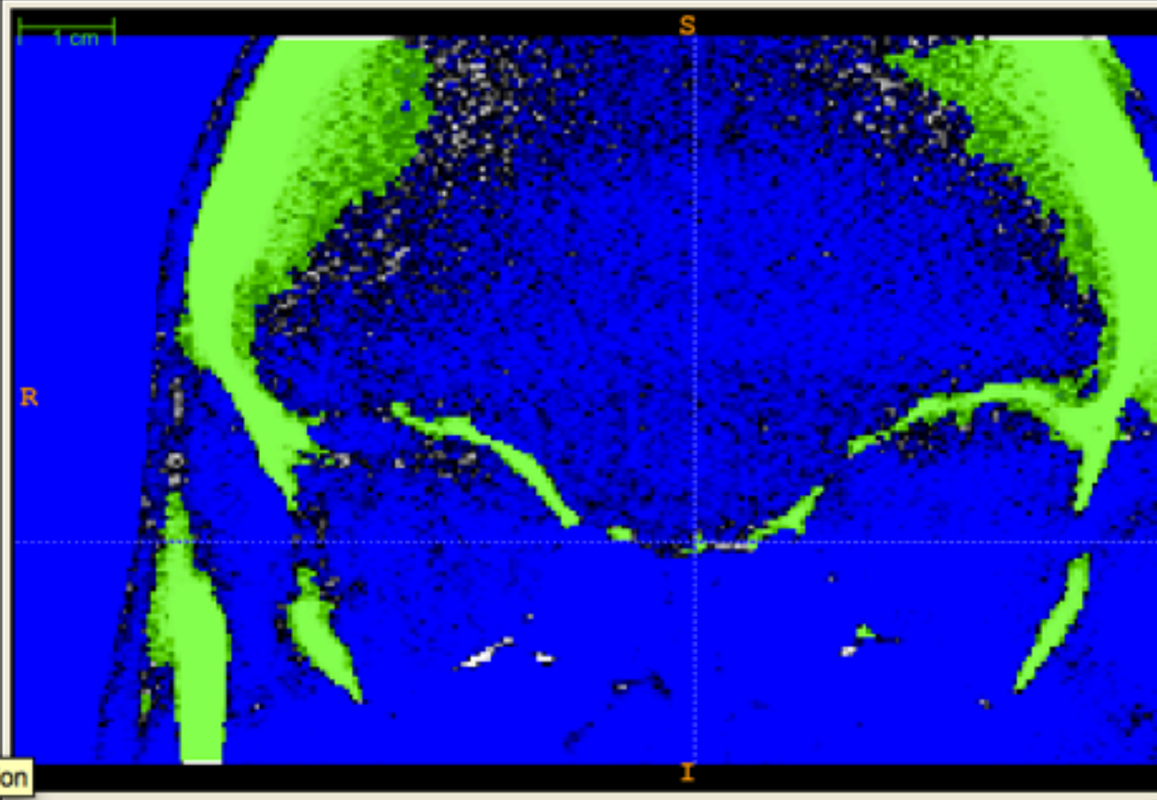
Overlay Tools Layout Help




zoom to fit 48 of 155



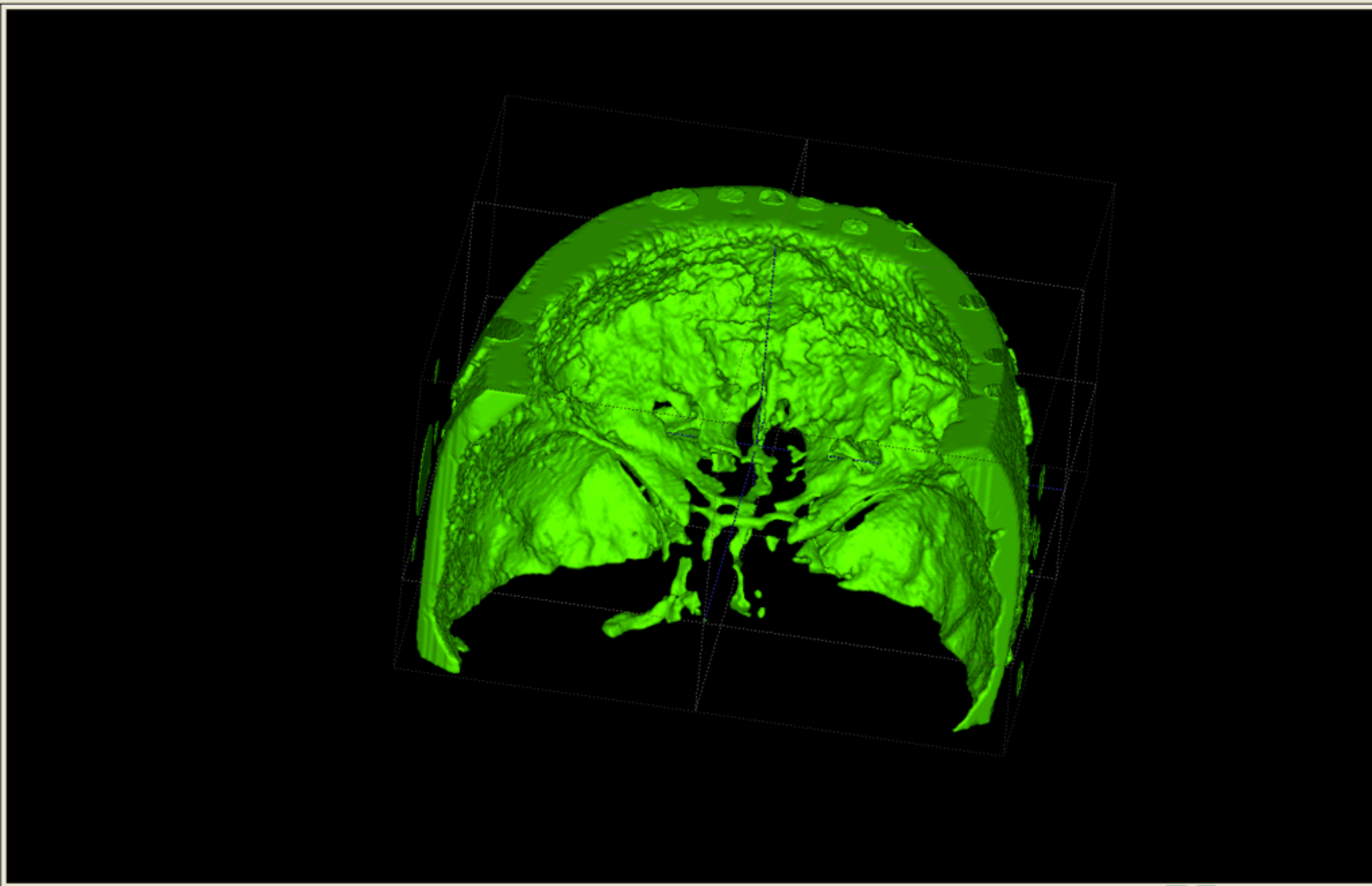



Update the 3D mesh of the segmentation

update mesh auto-update reset view

Downsized_T1.gipl.gz - [New Segmentation] - ITK-SNAP 2.2.0

Overlay Tools Layout Help



update mesh auto-update

10 cm

R

S

I

## Snake Parameters

*Intuitive Mode* | *Mathematical Mode* | *Advanced Settings*

**Balloon force:**

Pushes the boundary inwards or outwards, proportionally to the preprocessed image intensity. More info...

-0.3 — contracting | static | expanding

**Curvature force:**

Makes the boundary smoother and may help prevent leaking at corners and narrow places. More info...

1.00 — detailed | smooth | spherical

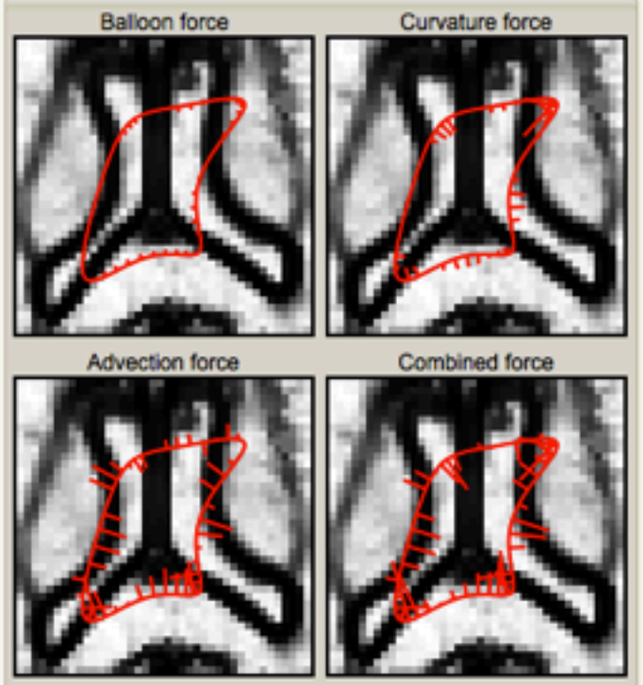
**Advection force:**

Pushes boundary back as it tries to cross edges, causing the segmentation to converge. More info...

5.00 — no effect | large effect

Load Parameters... Save Parameters...

*Conceptual illustration of the forces in 2D:*




Show animated 2D segmentation preview

Accept Help! Cancel

update mesh auto-update reset view

Shift Brazil (0:08) seg 04:06 Joao Rob

Downsized_T1.gipl.gz – [New Segmentation]* – ITK-SNAP 2.2.0

Overlay Tools Layout Help

10 cm A R

10 cm S I

## Snake Parameters

Intuitive Mode | Mathematical Mode | Advanced Settings

**Balloon force:**

Pushes the boundary inwards or outwards, proportionally to the preprocessed image intensity. More info...

-0.8 — contracting | static | expanding

**Curvature force:**

Makes the boundary smoother and may help prevent leaking at corners and narrow places. More info...

1.00 — detailed | smooth | spherical

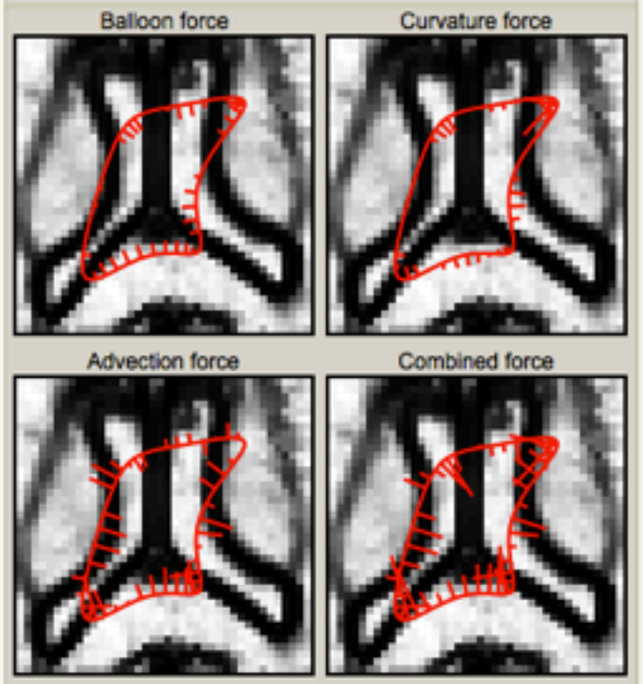
**Advection force:**

Pushes boundary back as it tries to cross edges, causing the segmentation to converge. More info...

6.00 — no effect | large effect

Load Parameters... Save Parameters...

*Conceptual illustration of the forces in 2D:*




Show animated 2D segmentation preview

Accept Help! Cancel

accept update mesh reset view

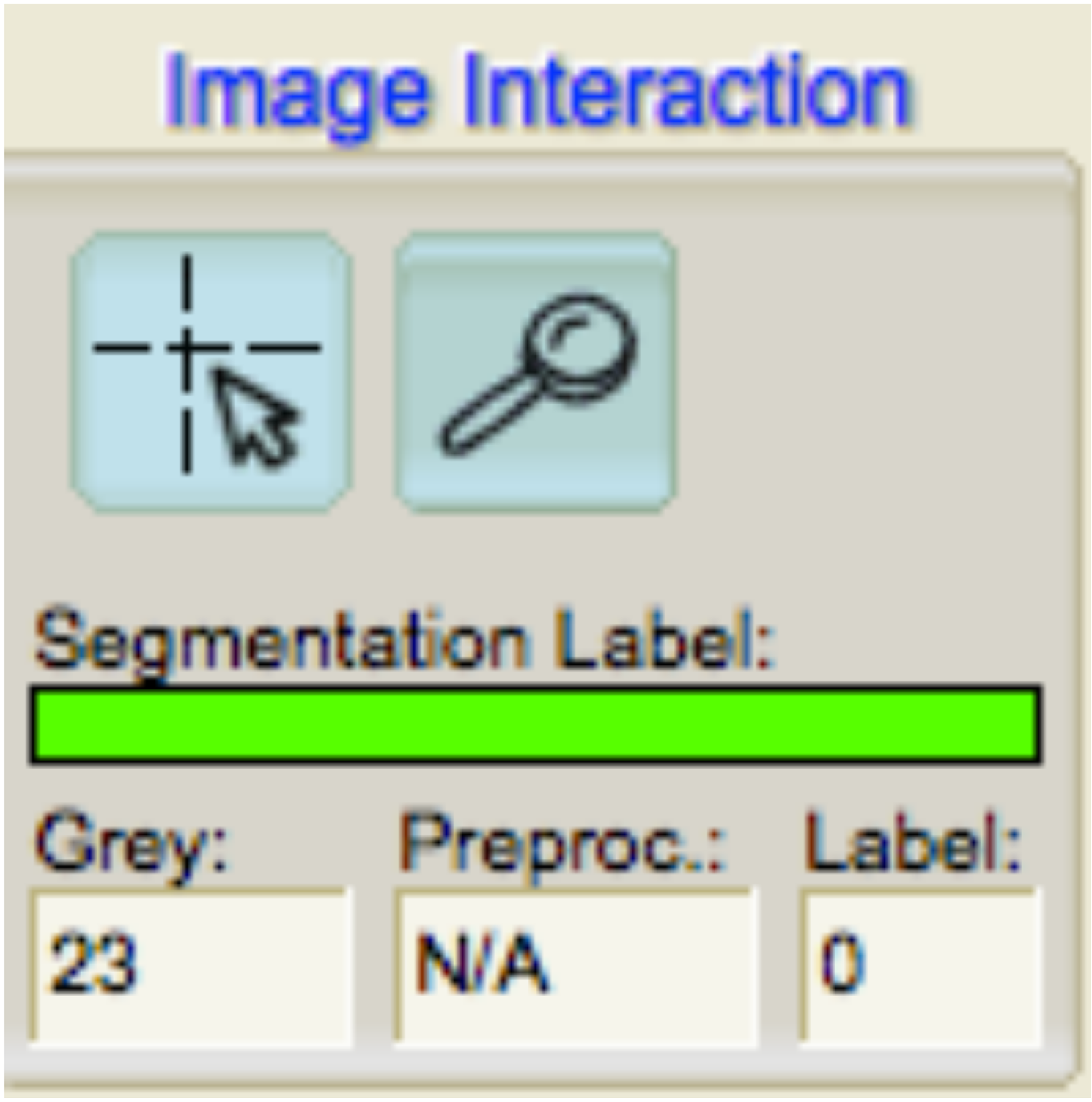
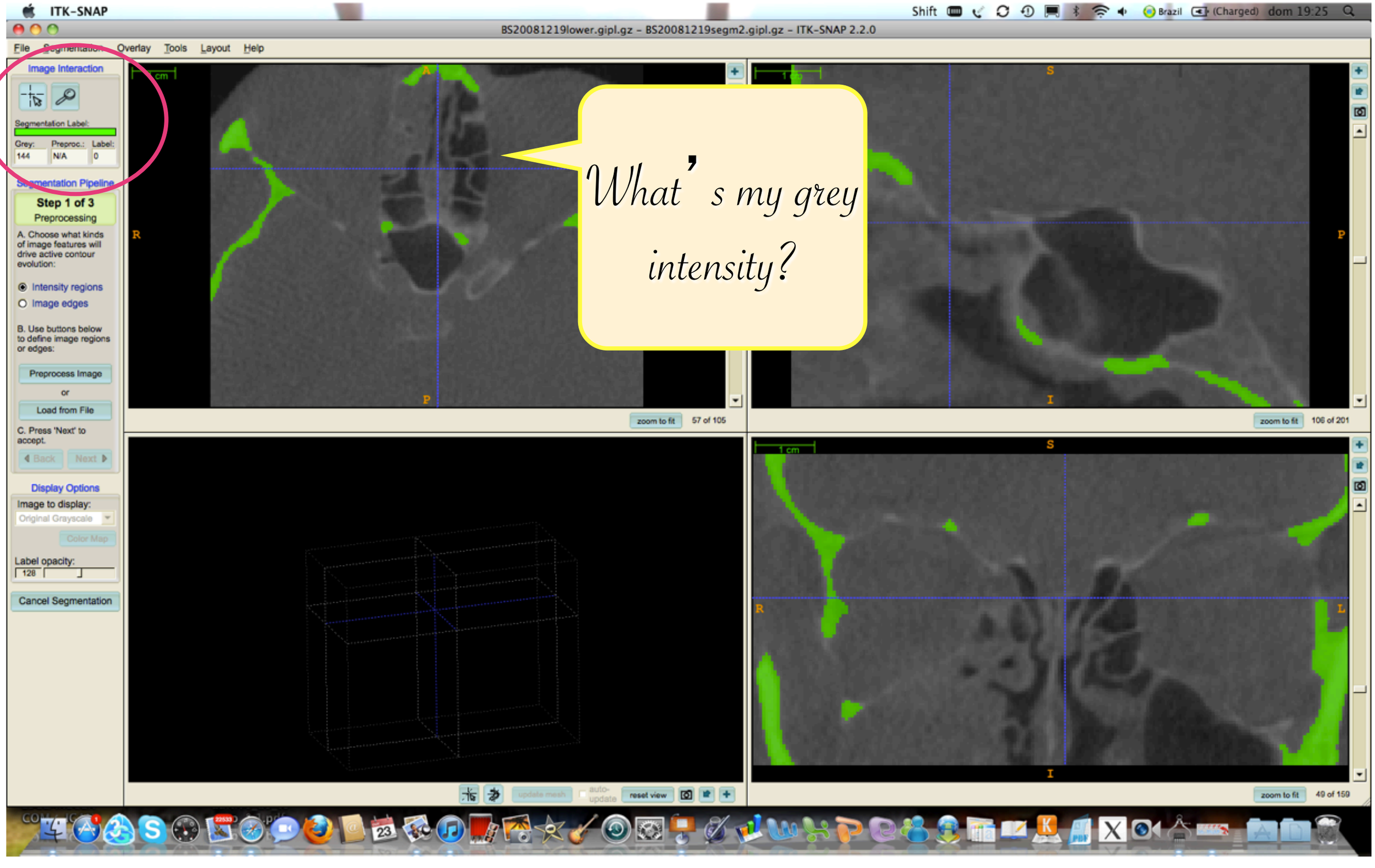


Image Interaction
Segmentation Label:
Grey:
Preproc.:
Label:
23
N/A
0


ITK-SNAP
BS20081219lower.gipl.gz – BS20081219segm2.gipl.gz – ITK-SNAP 2.2.0
File
Segmentation
Overlay
Tools
Layout
Help
Image Interaction
Segmentation Label:
Grey:
Preproc.:
Label:
144
N/A
0
Segmentation Pipeline
Step 1 of 3
Preprocessing
A. Choose what kinds of image features will drive active contour evolution:
Intensity regions
Image edges
B. Use buttons below to define image regions or edges:
Preprocess Image
or
Load from File
C. Press 'Next' to accept.
Back
Next
Display Options
Image to display:
Original Grayscale
Color Map
Label opacity:
128
Cancel Segmentation
What's my grey intensity?
zoom to fit
57 of 105
zoom to fit
106 of 201
update mesh
auto-update
reset view
zoom to fit
49 of 159

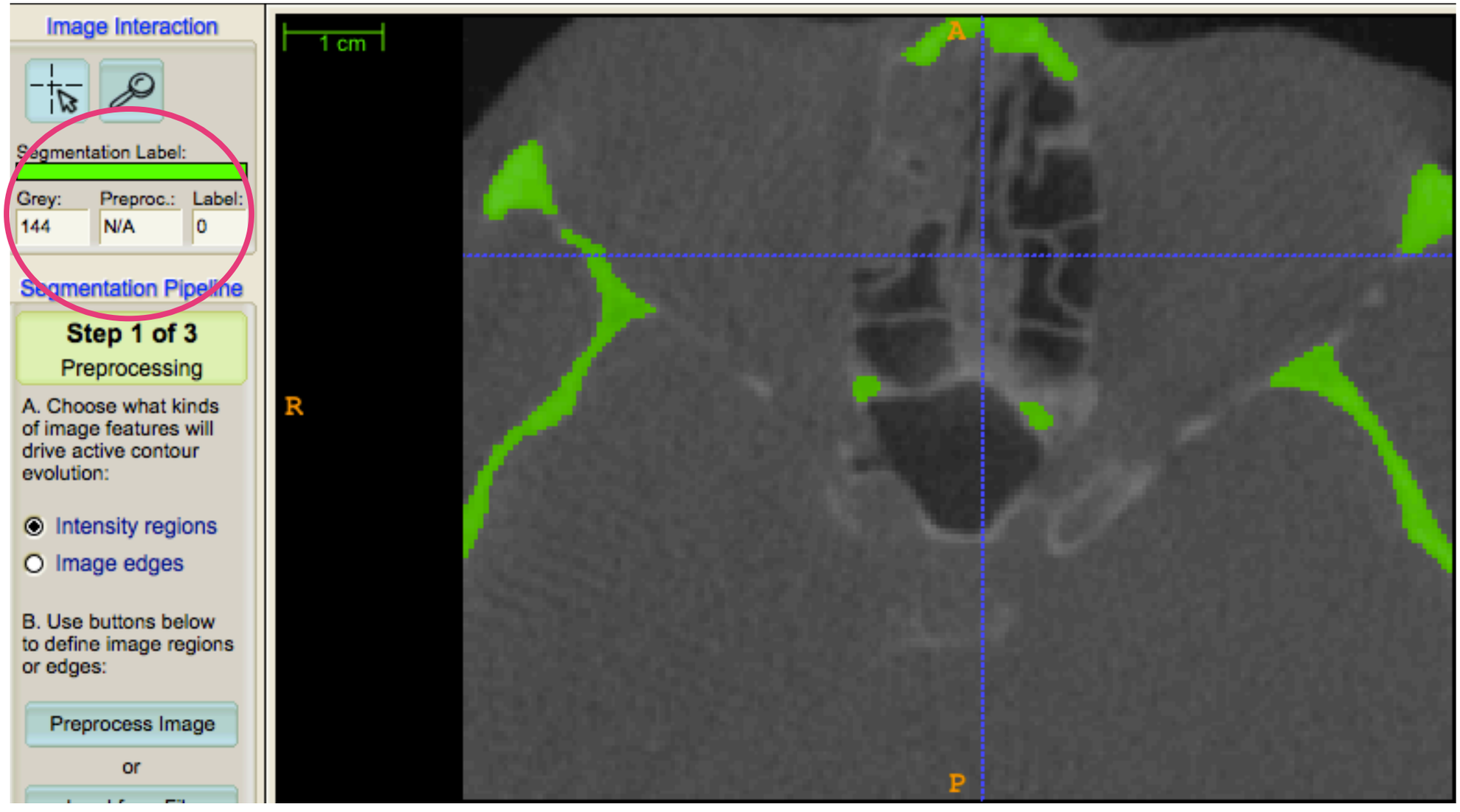


Image Interaction
Segmentation Label:
Grey:
Preproc.:
Label:
144
N/A
0
Segmentation Pipeline
Step 1 of 3
Preprocessing
A. Choose what kinds of image features will drive active contour evolution:
Intensity regions
Image edges
B. Use buttons below to define image regions or edges:
Preprocess Image
or
1 cm
A
R
P

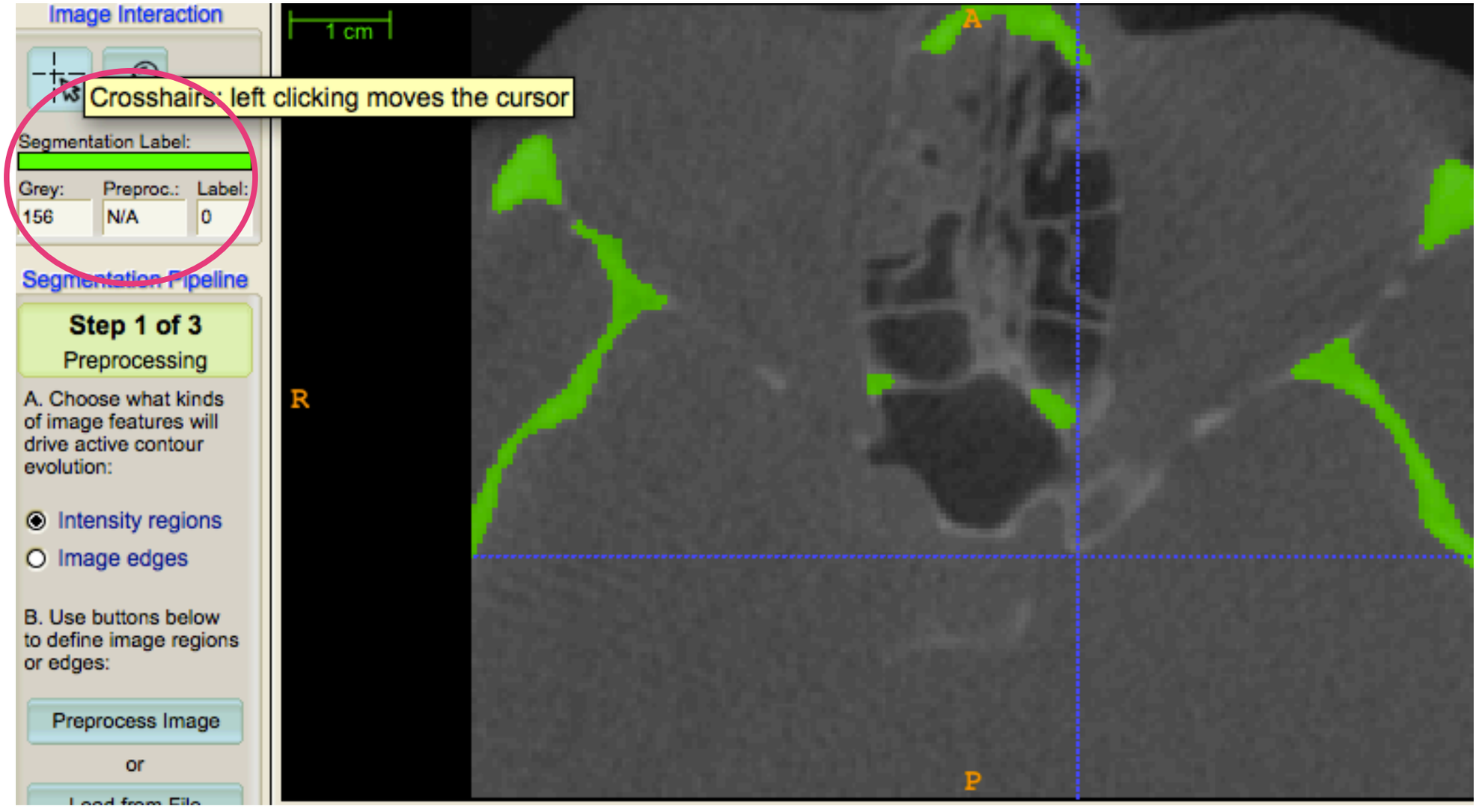


Image Interaction
Crosshairs: left clicking moves the cursor
Segmentation Label:
Grey:
Preproc.:
Label:
156
N/A
0
Segmentation Pipeline
Step 1 of 3
Preprocessing
A. Choose what kinds of image features will drive active contour evolution:
Intensity regions
Image edges
B. Use buttons below to define image regions or edges:
Preprocess Image
or
1 cm
A
R
P

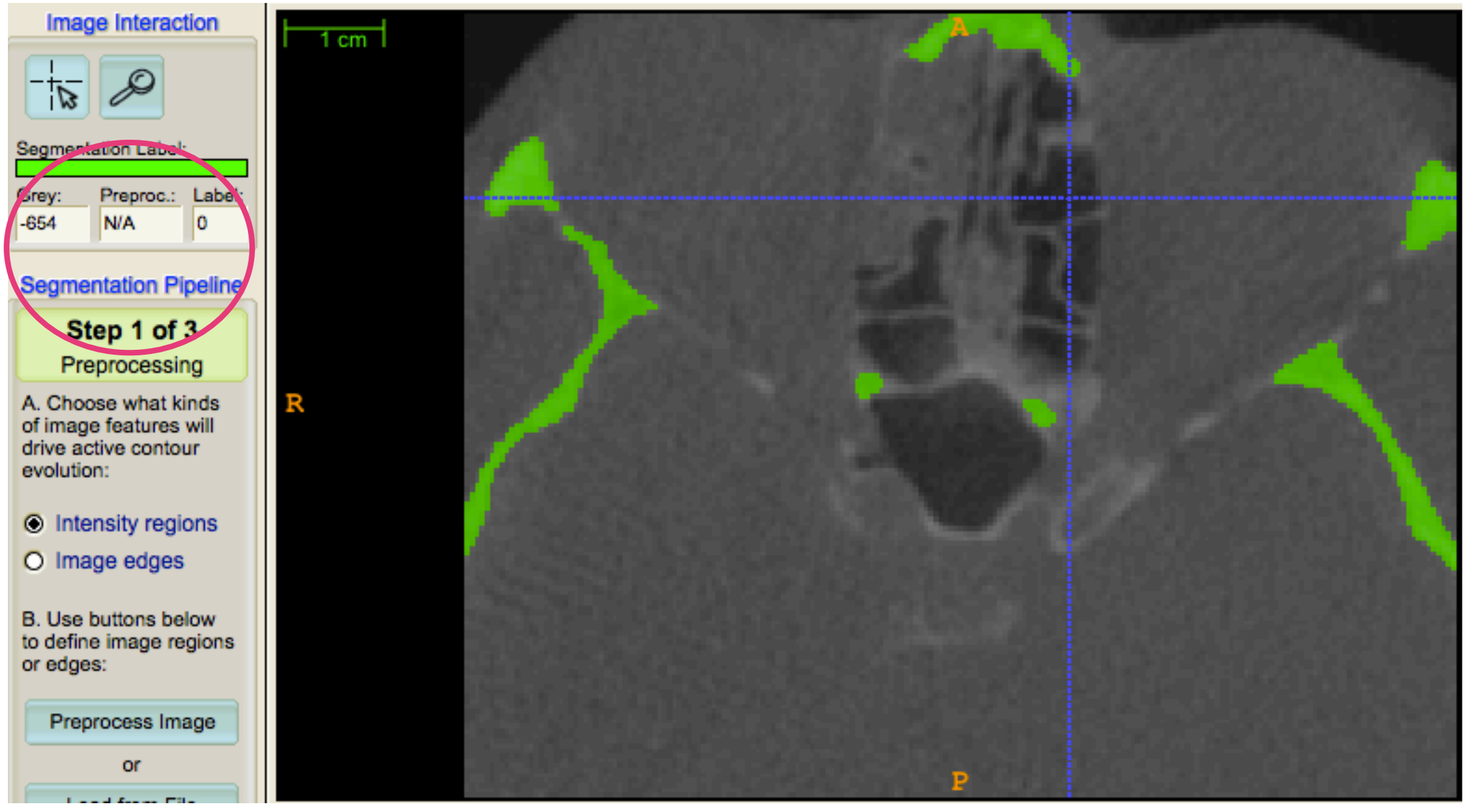


Image Interaction
Segmentation Label:
Grey:
Preproc.:
Label:
-654
N/A
0
Segmentation Pipeline
Step 1 of 3
Preprocessing
A. Choose what kinds of image features will drive active contour evolution:
Intensity regions
Image edges
B. Use buttons below to define image regions or edges:
Preprocess Image
or
1 cm
A
R
P

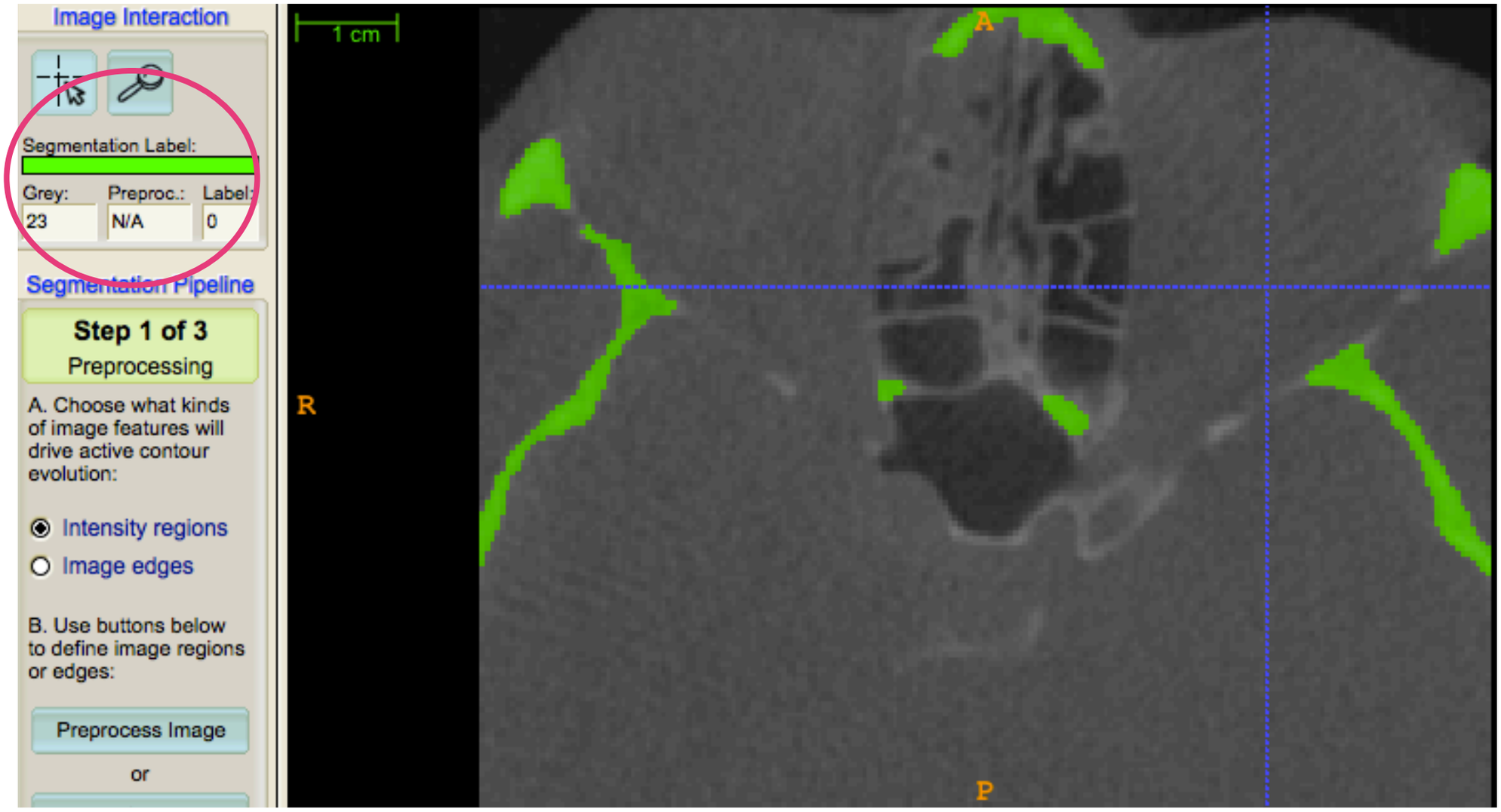


Image Interaction
Segmentation Label:
Grey:
Preproc.:
Label:
23
N/A
0
Segmentation Pipeline
Step 1 of 3
Preprocessing
A. Choose what kinds of image features will drive active contour evolution:
Intensity regions
Image edges
B. Use buttons below to define image regions or edges:
Preprocess Image
or
1 cm
A
R
P

Image Interaction

Segmentation Label:

| Grey: | Preproc.: | Label: |
|---|---|---|
| 156 | N/A | 0 |

Segmentation Pipeline

**Step 1 of 3**
Preprocessing

A. Choose what kinds of image features will drive active contour evolution:

- (•) Intensity regions
- ( ) Image edges

B. Use buttons below to define image regions or edges:

Preprocess Image

or

Load from File

C. Press 'Next' to accept.

Back Next

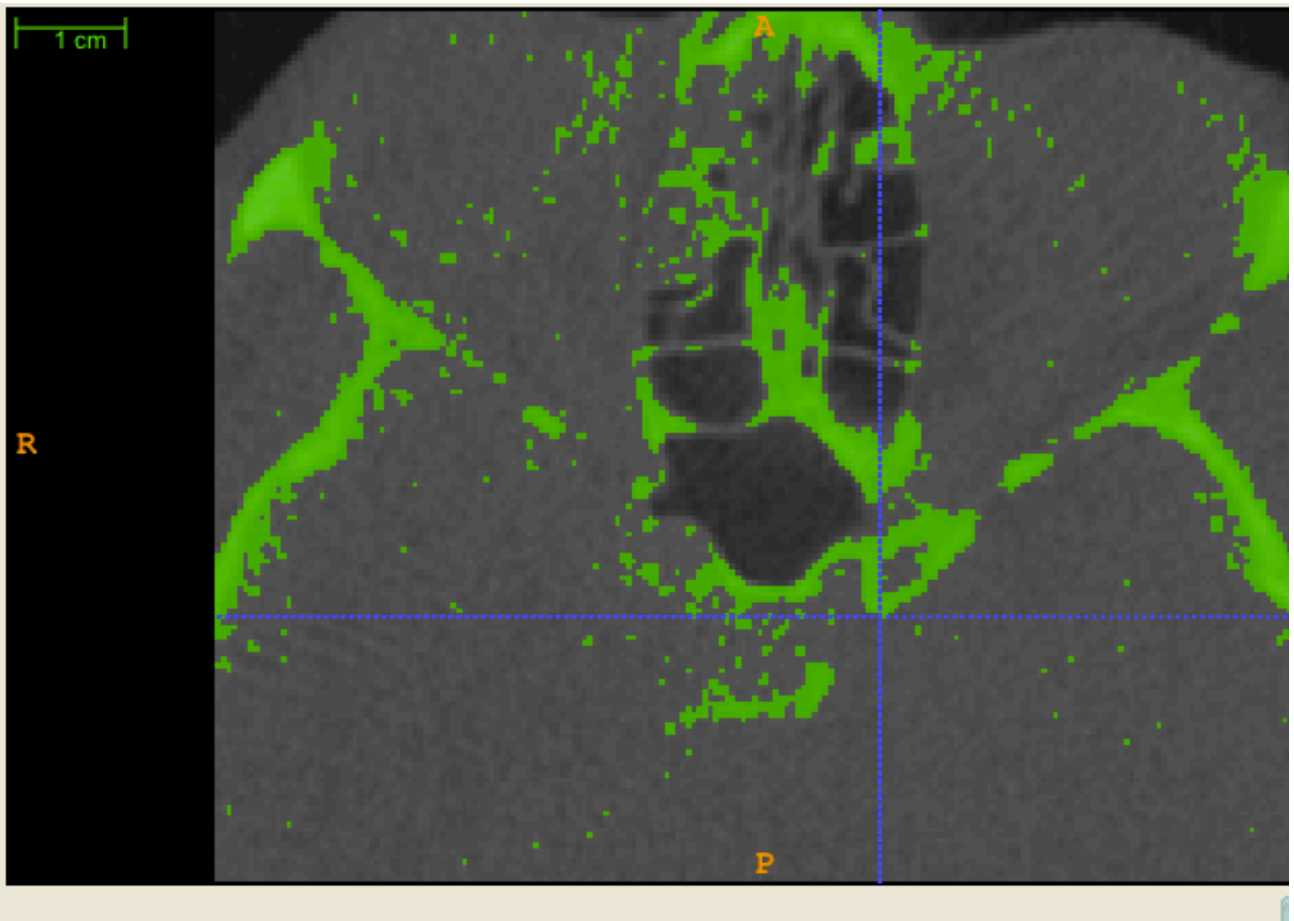
Display Options

Image to display: Preprocessed Image

Color Map

Label opacity: 128

Cancel Segmentation



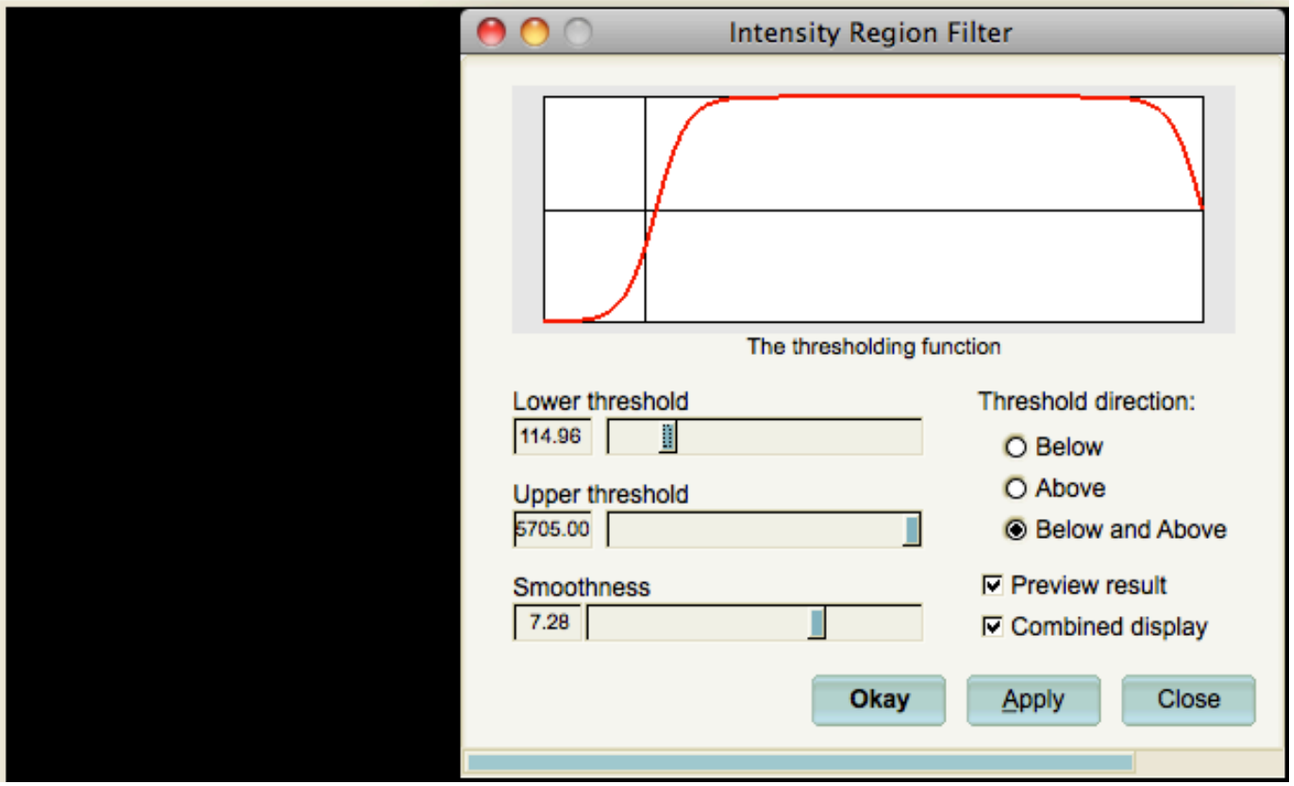



Image Interaction

Segmentation Label:

| Grey: | Preproc.: | Label: |
|---|---|---|
| 156 | N/A | 0 |

Segmentation Pipeline

**Step 1 of 3**
Preprocessing

A. Choose what kinds of image features will drive active contour evolution:

- (•) Intensity regions
- ( ) Image edges

B. Use buttons below to define image regions or edges:

Preprocess Image

or

Load from File

C. Press 'Next' to accept.

◀ Back  Next ▶

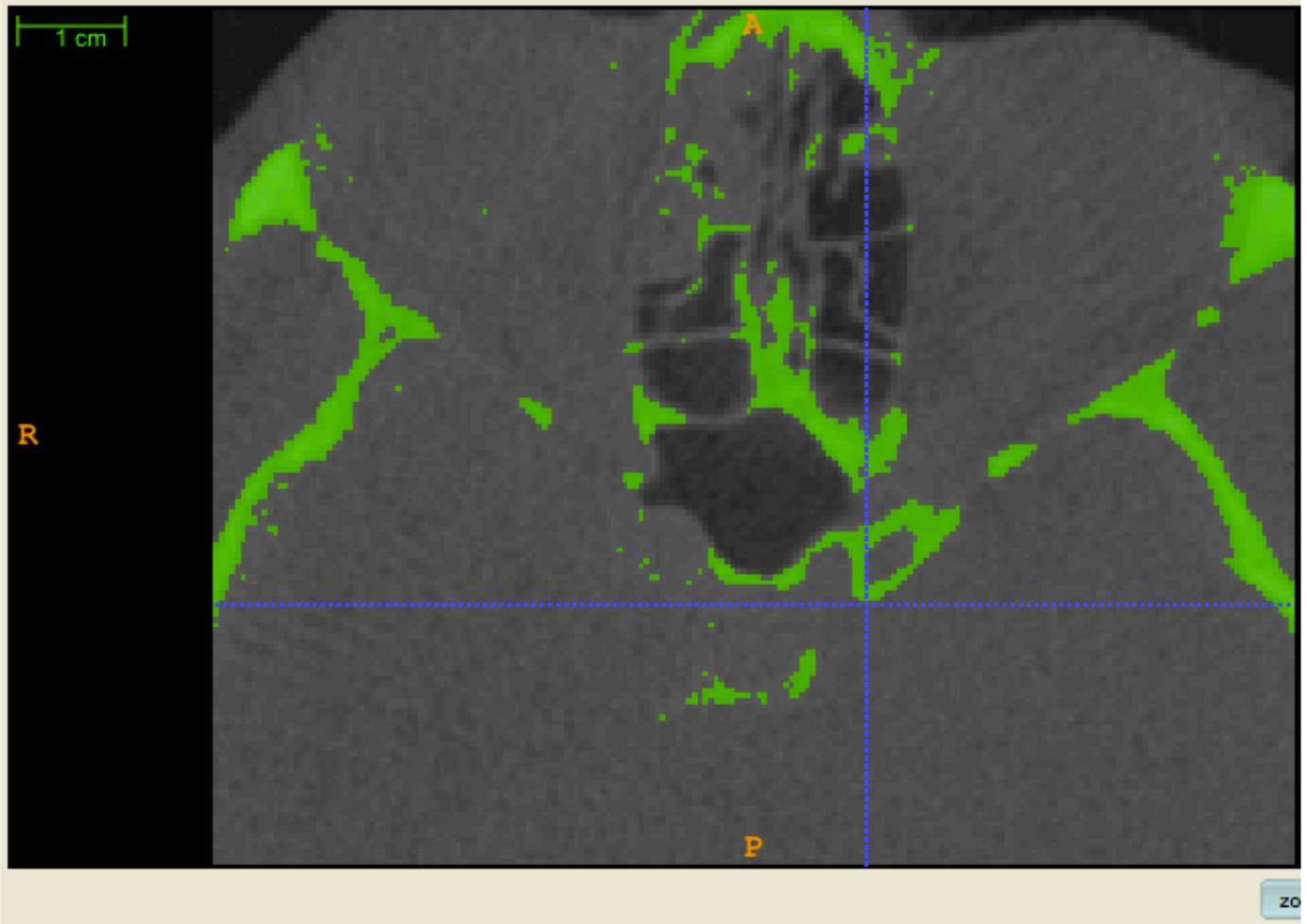
Display Options

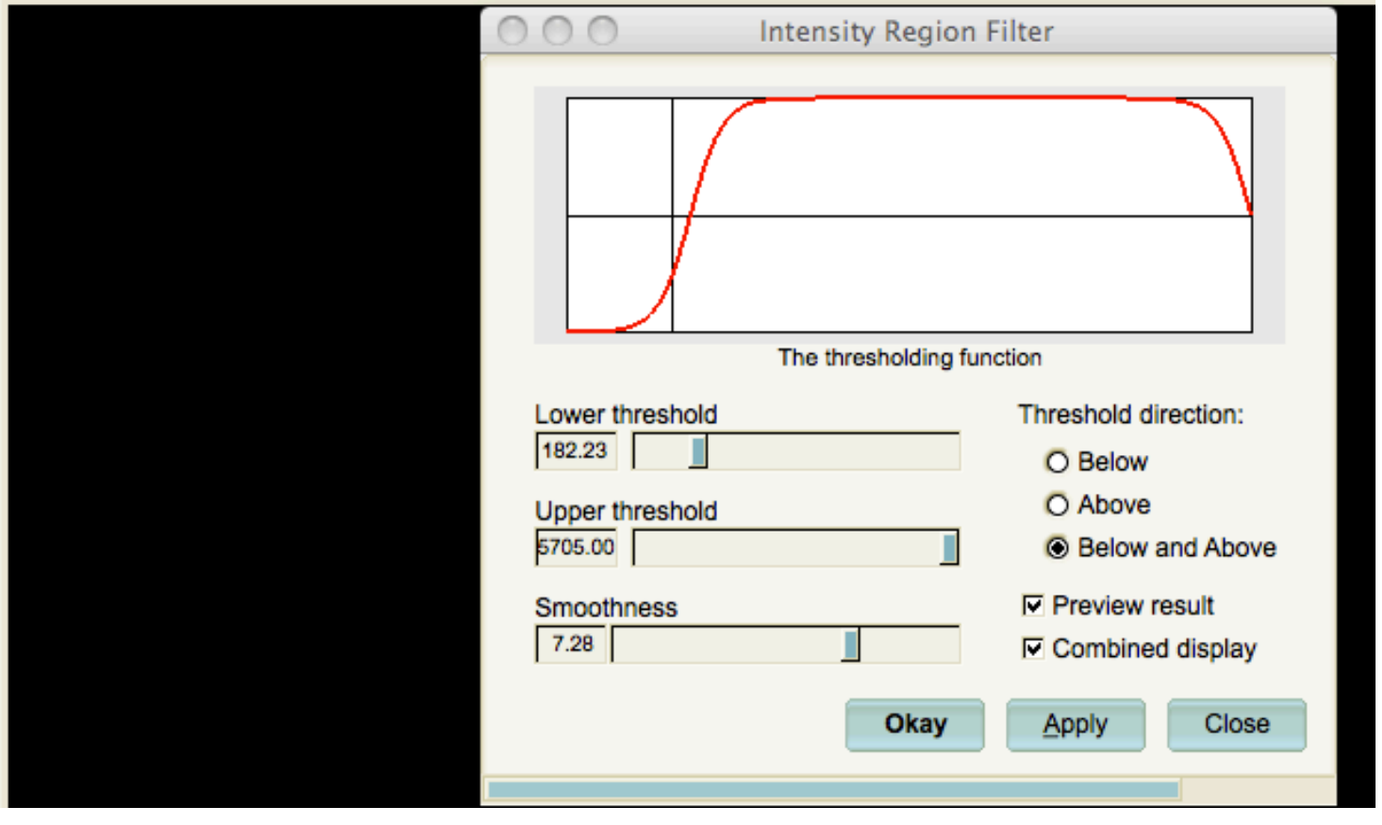
Image to display: Preprocessed Image

Color Map

Label opacity: 128

Cancel Segmentation



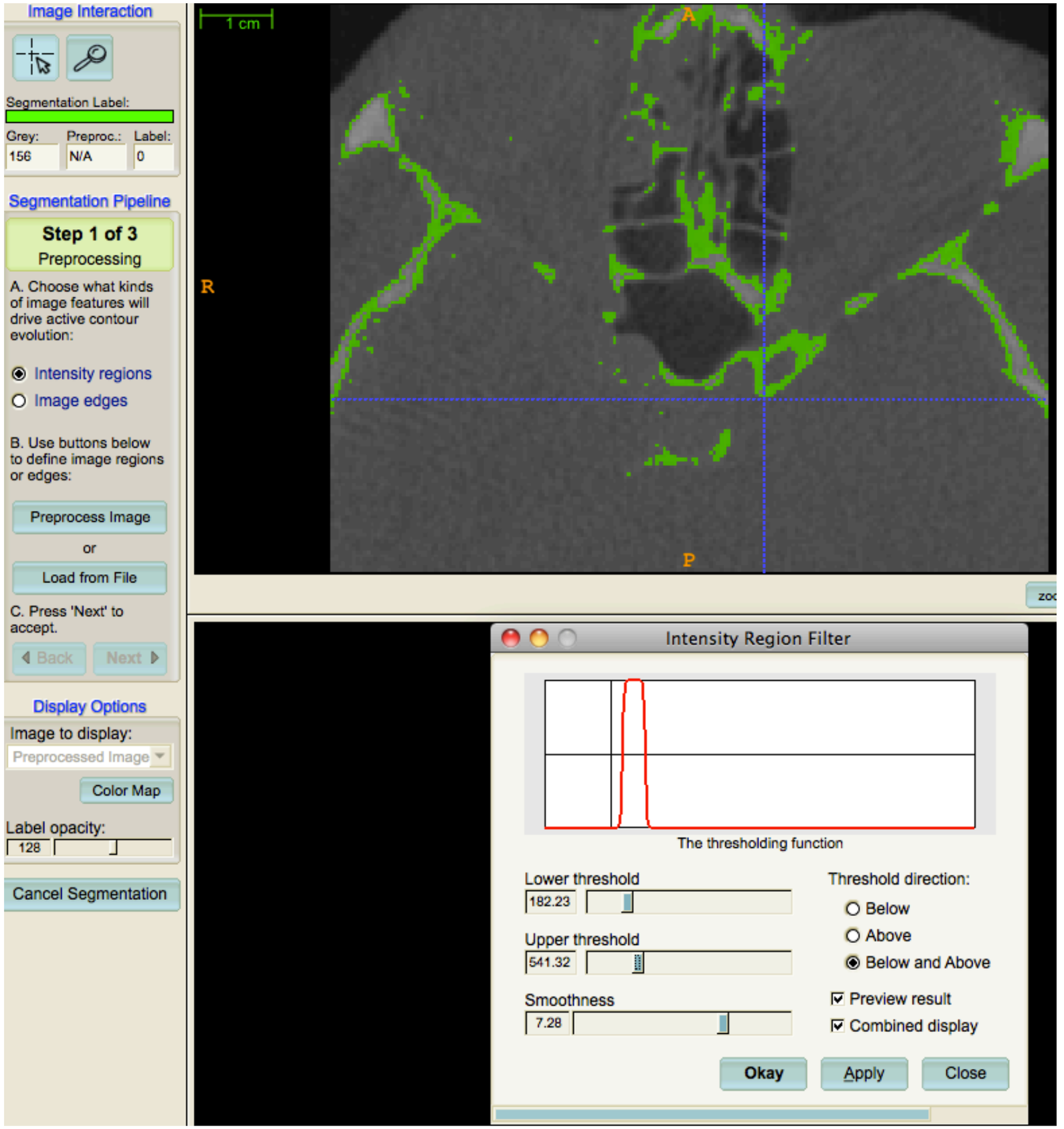


Image Interaction
Segmentation Label:
Grey:
Preproc.:
Label:
156
N/A
0
Segmentation Pipeline
Step 1 of 3
Preprocessing
A. Choose what kinds of image features will drive active contour evolution:
Intensity regions
Image edges
B. Use buttons below to define image regions or edges:
Preprocess Image
or
Load from File
C. Press 'Next' to accept.
Back
Next
Display Options
Image to display:
Preprocessed Image
Color Map
Label opacity:
128
Cancel Segmentation
1 cm
A
R
P
Intensity Region Filter
The thresholding function
Lower threshold
182.23
Upper threshold
541.32
Smoothness
7.28
Threshold direction:
Below
Above
Below and Above
Preview result
Combined display
Okay
Apply
Close

Image Interaction

Segmentation Label:

| Grey: | Preproc.: | Label: |
|---|---|---|
| 156 | N/A | 0 |

Segmentation Pipeline

**Step 1 of 3**
Preprocessing

A. Choose what kinds of image features will drive active contour evolution:

- (•) Intensity regions
- ( ) Image edges

B. Use buttons below to define image regions or edges:

Preprocess Image

or

Load from File

C. Press 'Next' to accept.

◀ Back  Next ▶

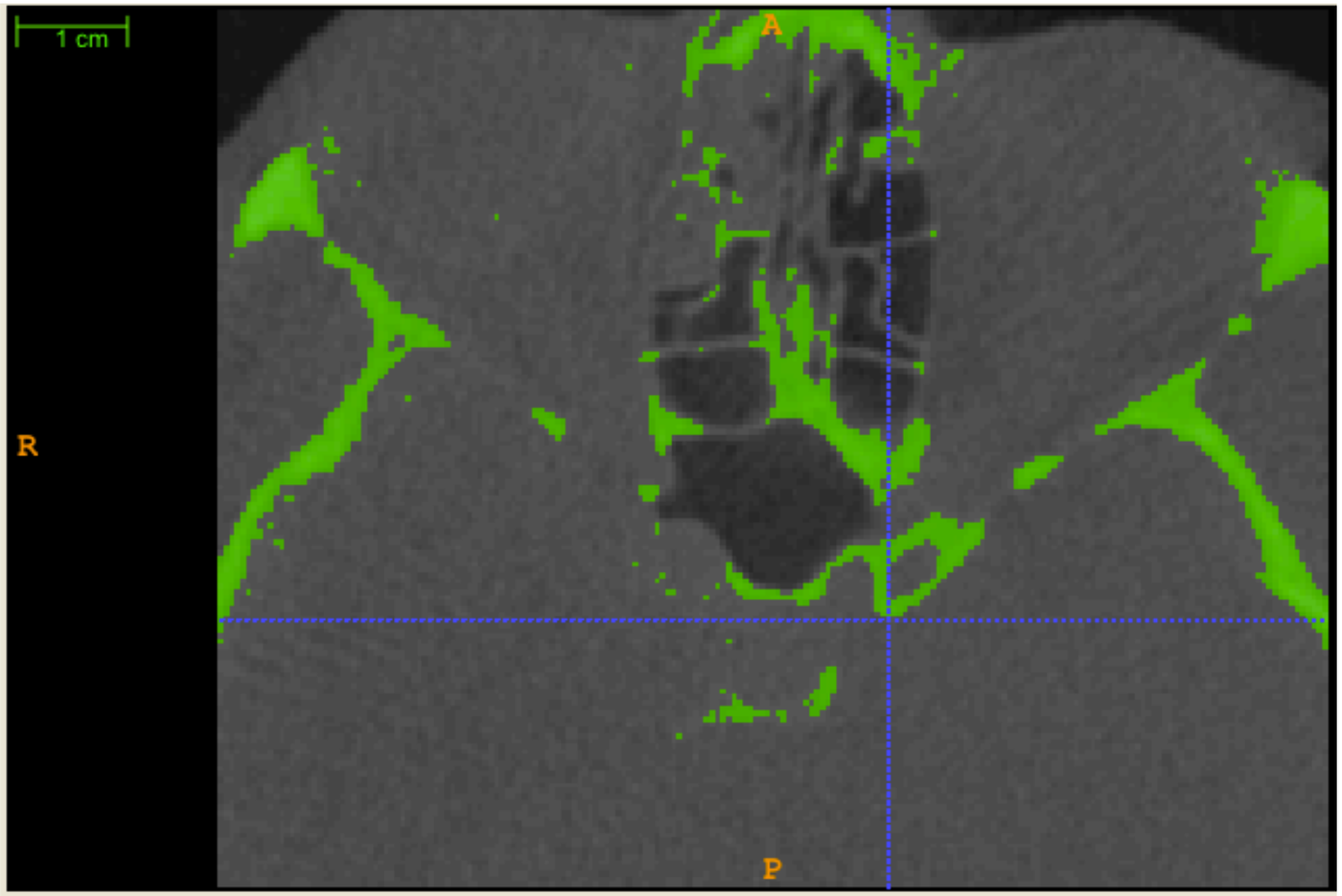
Display Options

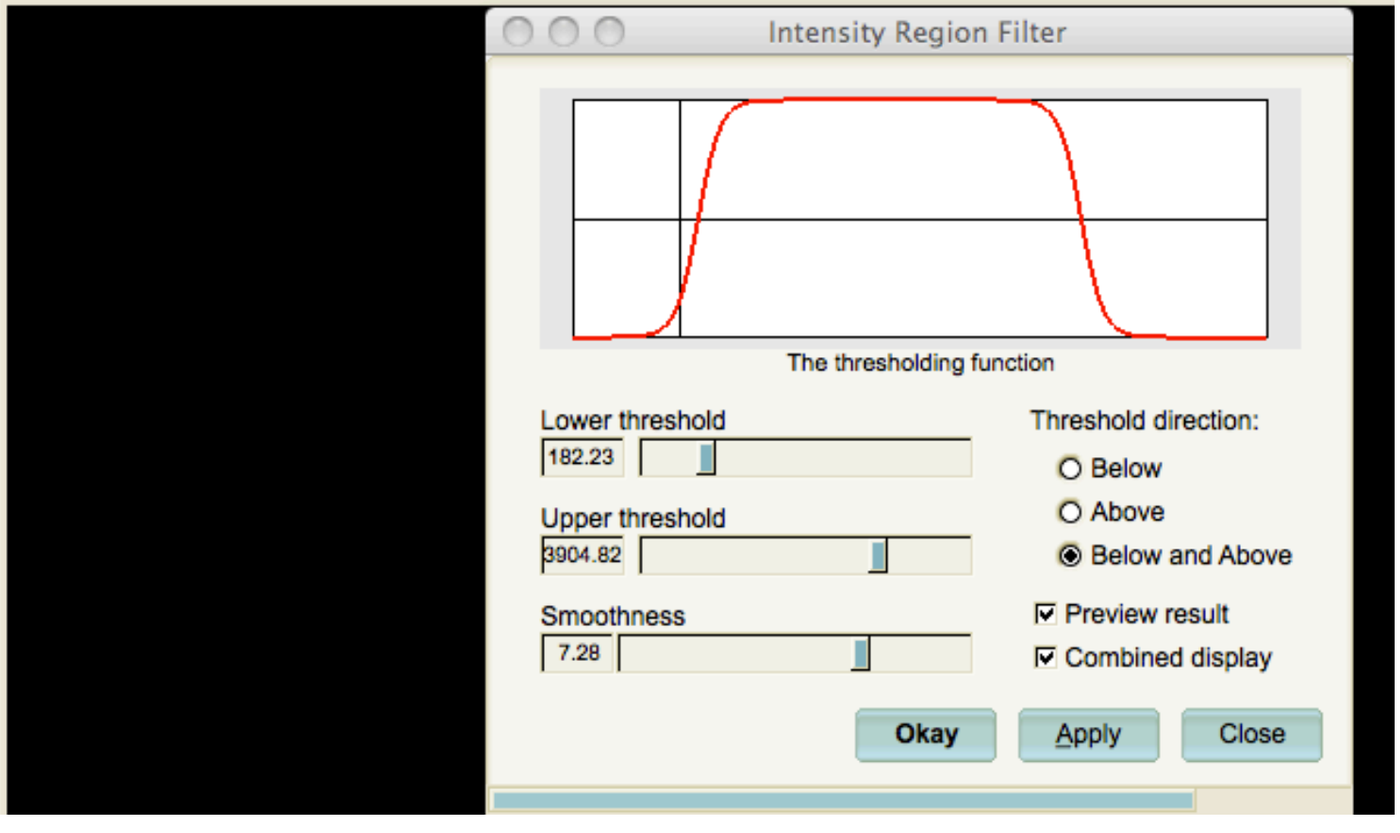
Image to display: Preprocessed Image

Color Map

Label opacity: 128

Cancel Segmentation



Snake Parameters

Intuitive Mode | Mathematical Mode | Advanced Settings

Balloon force:

Pushes the boundary inwards or outwards, proportionally to the preprocessed image intensity. More info...

1.0

contracting | static | expanding

Curvature force:

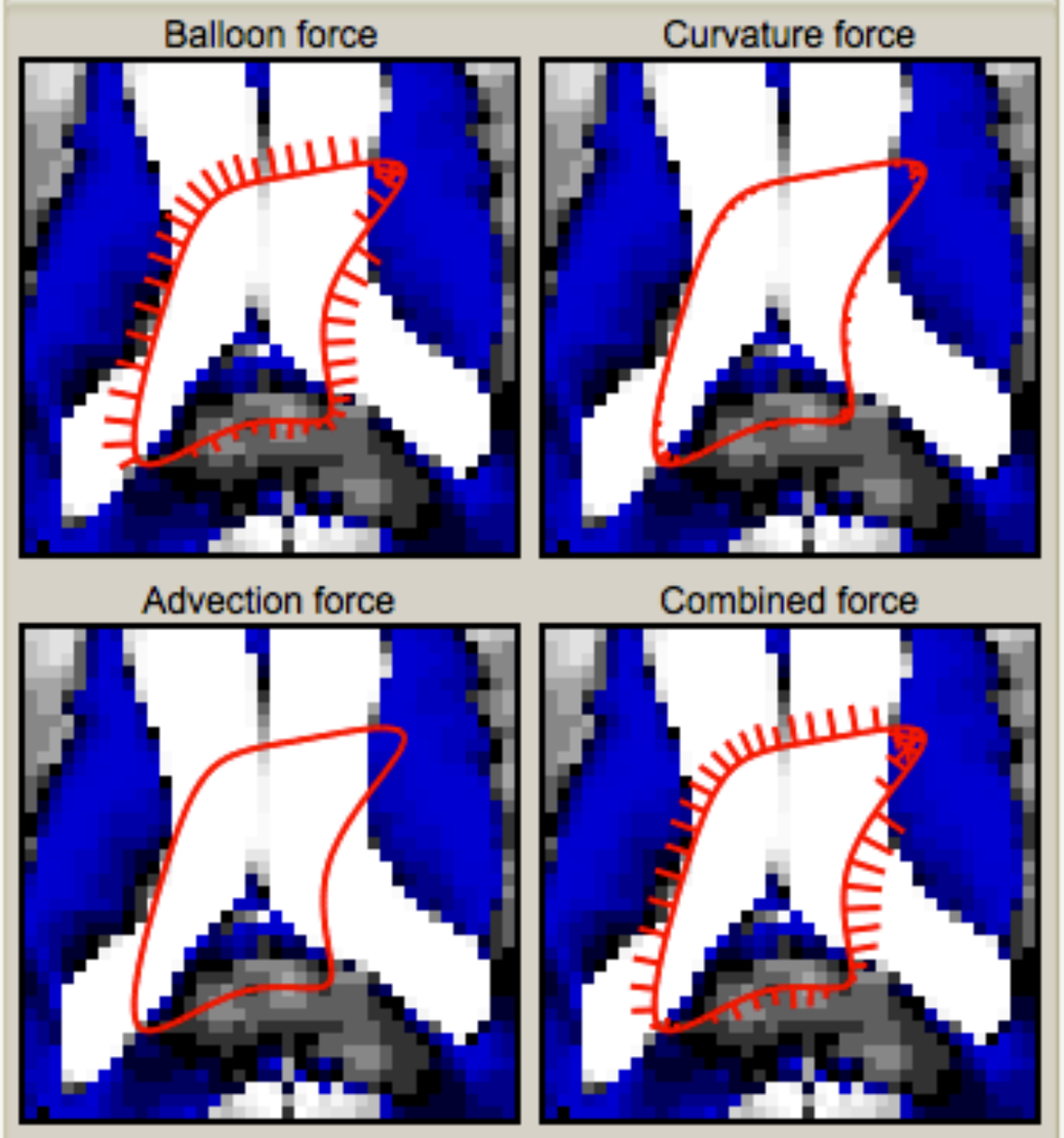
Makes the boundary smoother and may help prevent leaking at corners and narrow places. More info...

0.20

detailed | smooth | spherical

Load Parameters... Save Parameters...

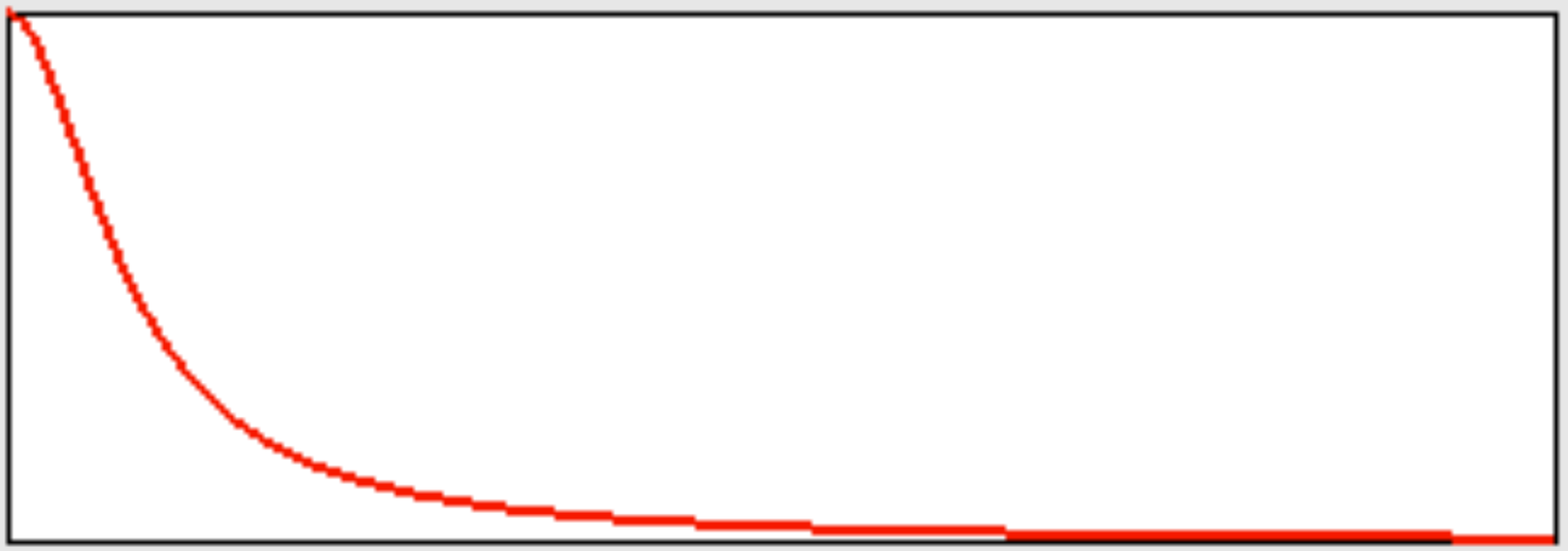
*Conceptual illustration of the forces in 2D:*




Show animated 2D segmentation preview

Accept Help! Cancel

Image Edge Filter



The function g() applied to the gradient magnitude image

Scale of Gaussian blurring (sigma)

0.7

Preview result

Edge contrast (kappa)

0.076

Edge mapping exponent

1.85

Okay | Apply | Close

# Snake Parameters (Image Edges)