

...ins wall ...al aortic
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Constitutive modeling of vascular tissue with application to the abdominal aortic aneurysms wall



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vascuMECH

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Constitutive modeling of vascular tissue with application to the abdominal aortic aneurysms wall



ROYAL INSTITUTE
OF TECHNOLOGY

T.Christian Gasser

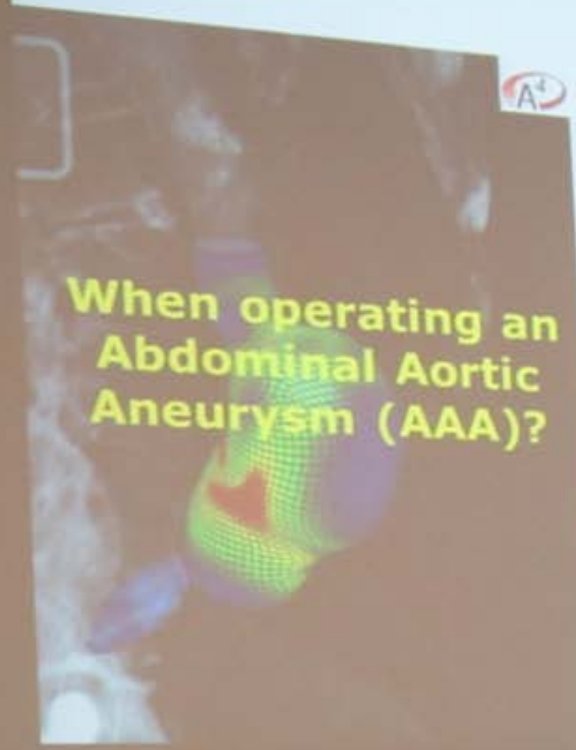
KTH Solid Mechanics, Royal Institute of Technology
Stockholm, Sweden

vascuMECH

<http://halif-dom.halif.kth.se/vascumech>



Abdominal Aortic Aneurysm (AAA)



When operating an Abdominal Aortic Aneurysm (AAA)?

EVAR repair



Surgical repair



5% prevalence in population older than 65
AAA repair indication: diameter reaches 5.5cm
40 000 AAA repairs/year in Europe
Risks for the patient
Costs for patient/community







Select and Caption Images for Reporting

Removals* Date 1931, vs. Analysis
Acquisition: 24.05.2007



Rupture Risk Index

Stage Caption/Remarks

- Capture Source
- Joined Stage and 3D Viewer
 - 3D Viewer
 - Stage Viewer
- OK



TELEPHONE



GDP - output

- The problem with the debt ceiling
- It is a **political** decision
- It is a **political** decision



GDH-model

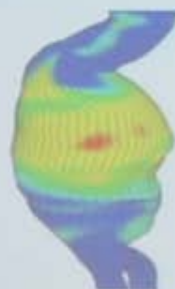
The problem with the GDH model

- $\int_{\Omega} \text{div}(\mathbf{g}) \, dx = 0$
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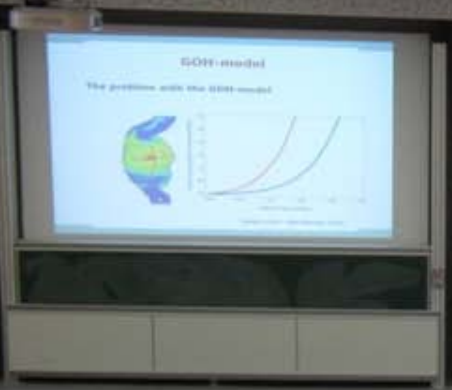
EPSON

GOH-model

The problem with the GOH-model



Gasser et al., Acta Biomater, 2012





4000

The possibilities with the



The slide displays a globe with a blue and green color scheme, likely representing environmental or geographical data. The text above the globe reads "The possibilities with the".

LECTURER'S DESK

A wooden desk with a laptop and a microphone, where the lecturer is standing.

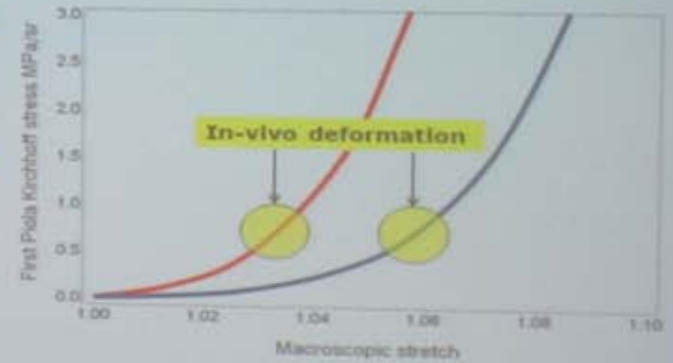
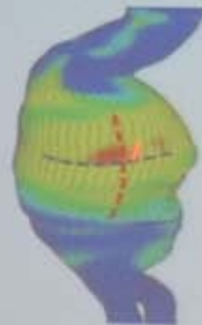
STUDENT SEATING

A series of rows of wooden desks and chairs, arranged in a tiered fashion, facing the front of the lecture hall.

EPSON

GOH-model

The problem with the GOH-model



Gasser et al., Acta Biomater, 2012







Summary

Every model has its limitations

Generic (multi-scale)
histomechanical approach

Interface between mechanics
and biology

Burch et al, Cardiovasc Res, 2012

AAA growth model reflects
salient features...

... but needs revisions.

AAA simulations provides useful
information

Will that help the patient??



When operating
on an AAA?



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