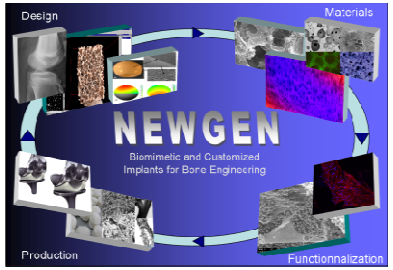
Department of Maxillofacial Surgery, Lithuanian University of Health Sciences

GENERAL PRESENTATION

- ✓ **Complete denomination**: Lithuanian University of Health Sciences
- ✓ **Location (city, country)**: Eiveniu str. 2, LT-50009 Kaunas, Lithuania
- ✓ **Director**: Prof. Gintaras Juodzbalys
- ✓ **Contact person in NEWGEN**: Prof. Gintaras Juodzbalys; +370 37 323153
  gintaras@stilusoptimus.lt
- ✓ **Working Group involvement**: Bone plastic materials in oral and maxillofacial surgery, bioactive scaffolds
- ✓ **Staff**: Dr. Povilas Daugela, Dr. Mindaugas Pranskunas, Dr. Arturas Stumbras, Dr. Julius Maminskas
- ✓ **Research topics**: bone plastic materials, cellulose bone scaffold, platelet concentrates, stem cells, oral and maxillofacial surgery



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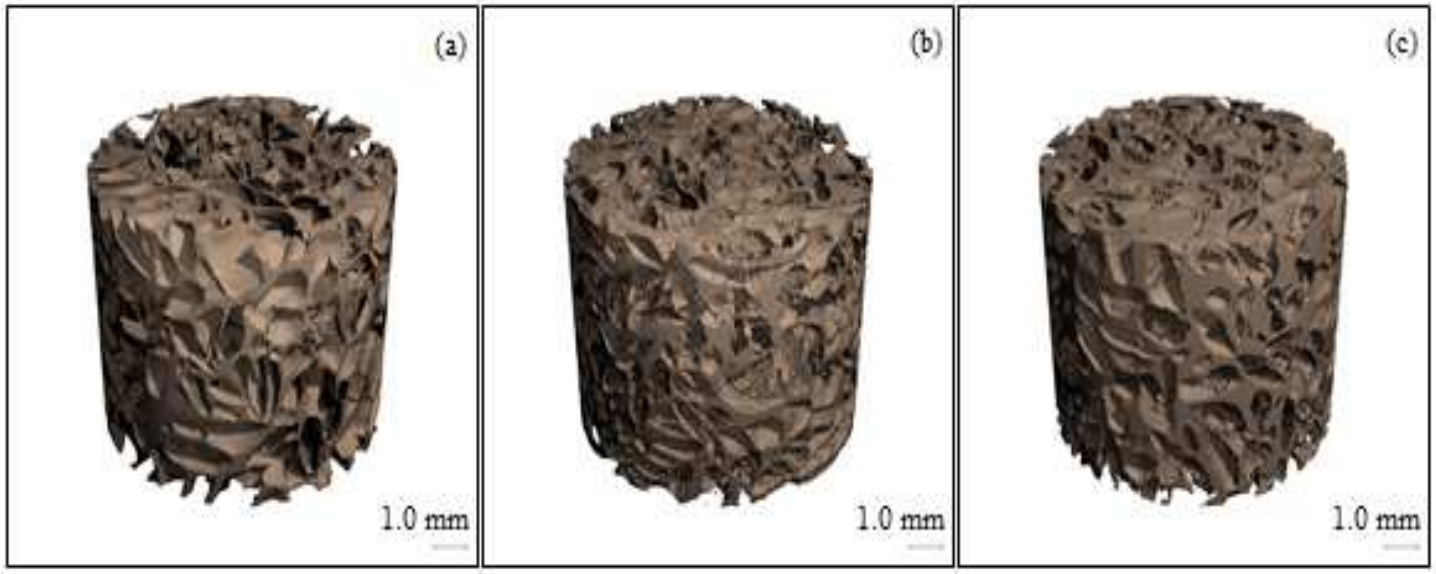
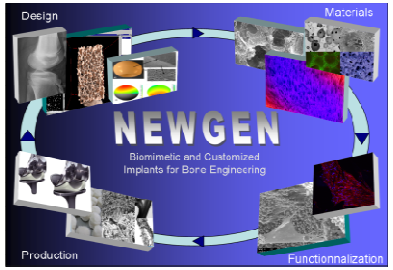
BIOMATERIALS/NEWGEN TOPICS

Bone tissue engineering is a rapidly growing alternative to heal damaged bone tissue.



a) cellulose scaffold; b) nano-hydroxyapatite – cellulose scaffold; c) µ-hydroxyapatite – cellulose scaffold.

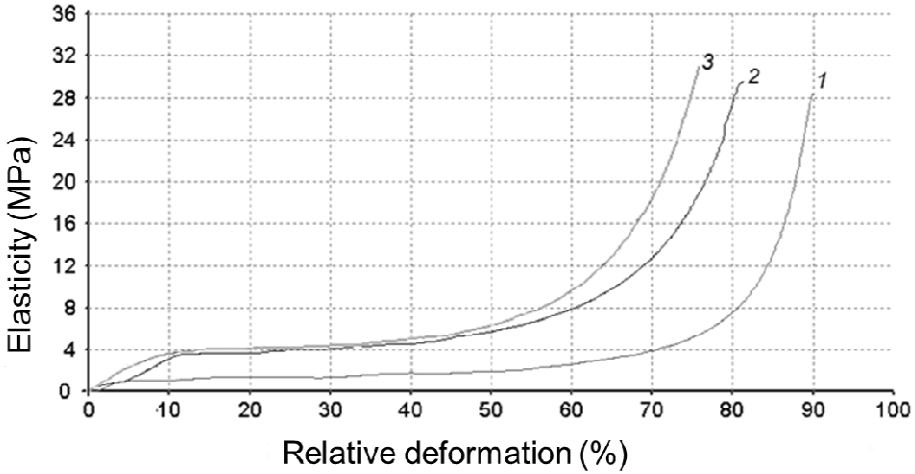
The research focus on cellulose bone scaffold synthesis and investigations, including development of bioactive scaffolds, composed together with platelet concentrates, growth factors, and mesenchymal stem cells.



BIOMATERIALS/NEWGEN TOPICS

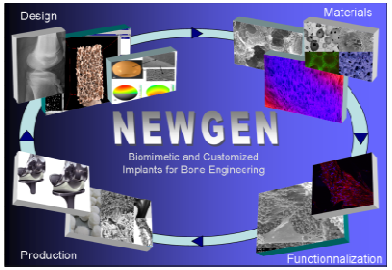
In vitro

Mechanical scaffolds properties



1 - cellulose scaffold;
2 - nano-hydroxyapatite – cellulose scaffold;
3 - µ-hydroxyapatite – cellulose scaffold.

Samples	Structural properties				
	$X_{v,\,\%}$	*A*, %	*SS*, mm^{-1}	*L*, mm	*D*, mm
Cellulose scaffold	25	75	15	0,21	0,75
nano-hydroxyapatite – cellulose scaffold	28	72	19	0,12	0,49
µ-hydroxyapatite – cellulose scaffold	34	66	13	0,21	0,54

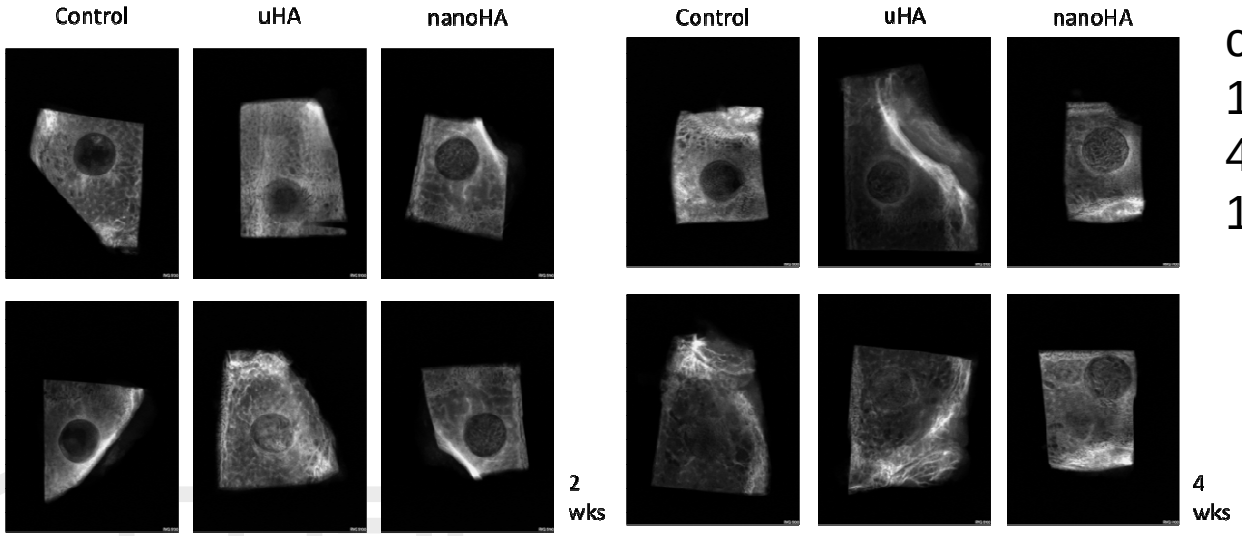


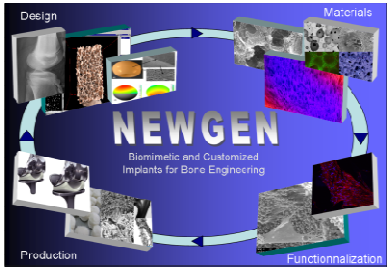
BIOMATERIALS/NEWGEN TOPICS

In vivo

New Zealand rabbits, 4 defects in each calvaria.
Groups:
1 – cellulose scaffold (2wks., 1mth.; 3mth.);
2 – nano-hydroxyapatite – cellulose scaffold (2wks., 1mth.; 3mth.);
3 – µ-hydroxyapatite – cellulose scaffold(2w., 1mth.; 3mth.);
4 – control (2wks., 1mth.; 2mth.).

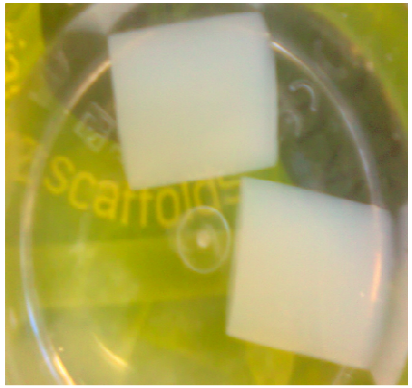
X – Ray view

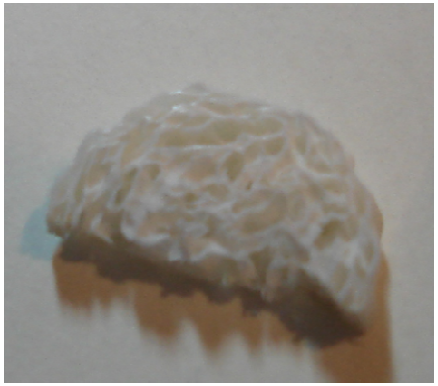


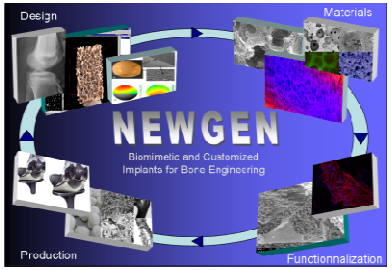


Further research stages

1) µCT analysis;
2) Histomorphometrical and imunohistochemical analysis of samples;
3) Analysis of composite scaffolds, enmeshed with mesenchymal stem cells (*in vitro, in vivo*).







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Working group

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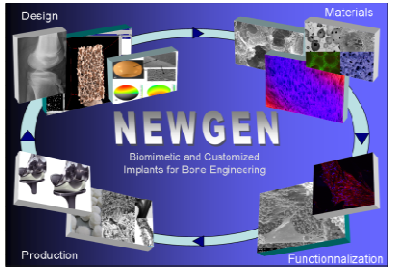

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