New Stent Platforms

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Disclosure Statement of Financial Interest

Within the past 12 months, the presenter or their spouse/partner have had a financial interest/arrangement or affiliation with the organization(s) listed below.

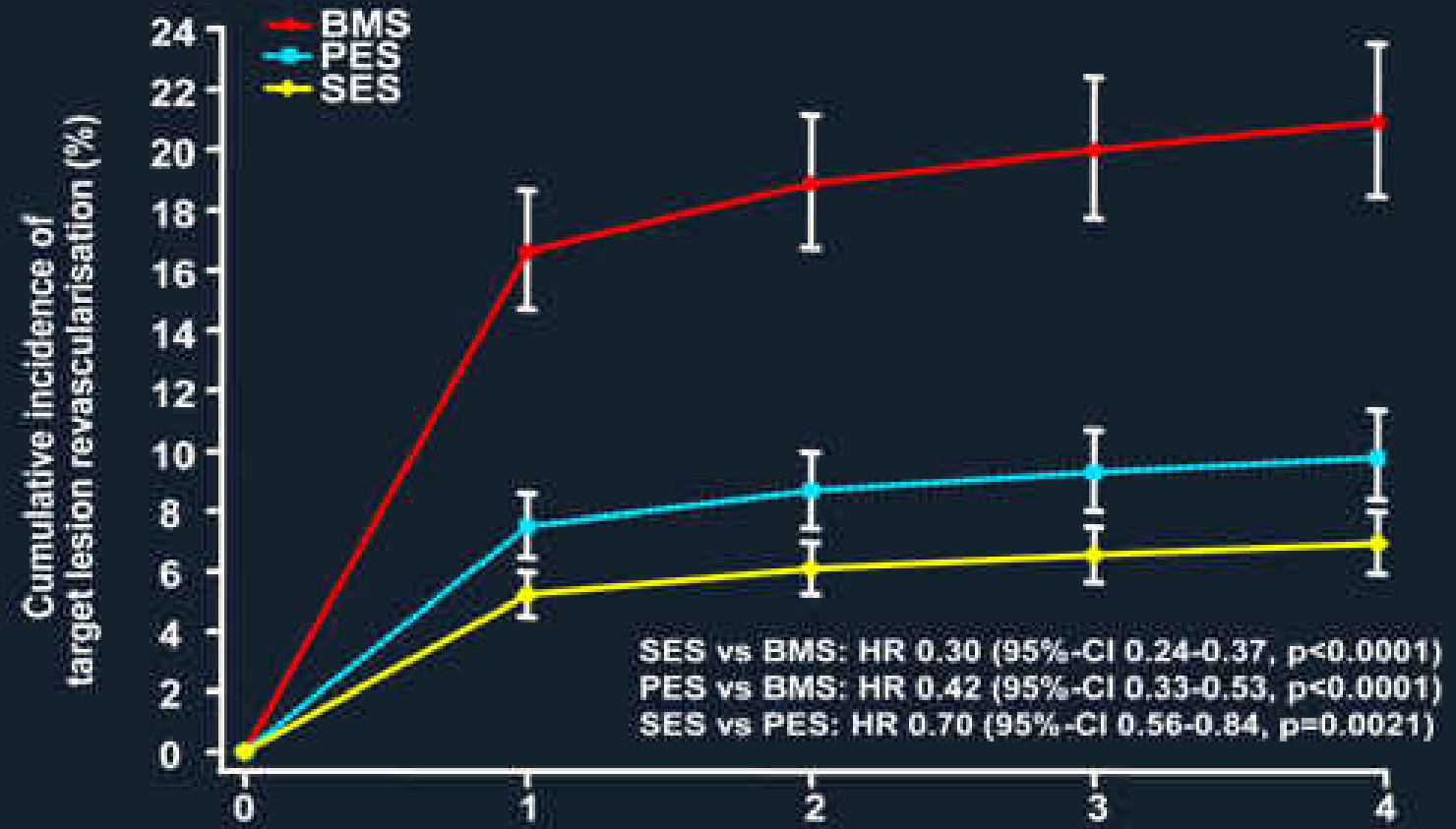
Physician Name	Company/Relationship
Eberhard Grube, MD	Inspire MD (C) Boston Scientific (G,C,SB) Labcoat (C) Cordis JnJ (C) Abbott (C) Biosensors (G,E,C,SB) Orbus Neich (C)

Key

G – Grant and or Research Support
C – Consulting fees, Honoraria
SB – Speaker's Bureau
E – Equity Interests
R – Royalty Income
O – Ownership
S - Salary
I – Intellectual Property Rights
OF – Other Financial Benefits

Network meta-analysis: 38 trials, 18,023 pts

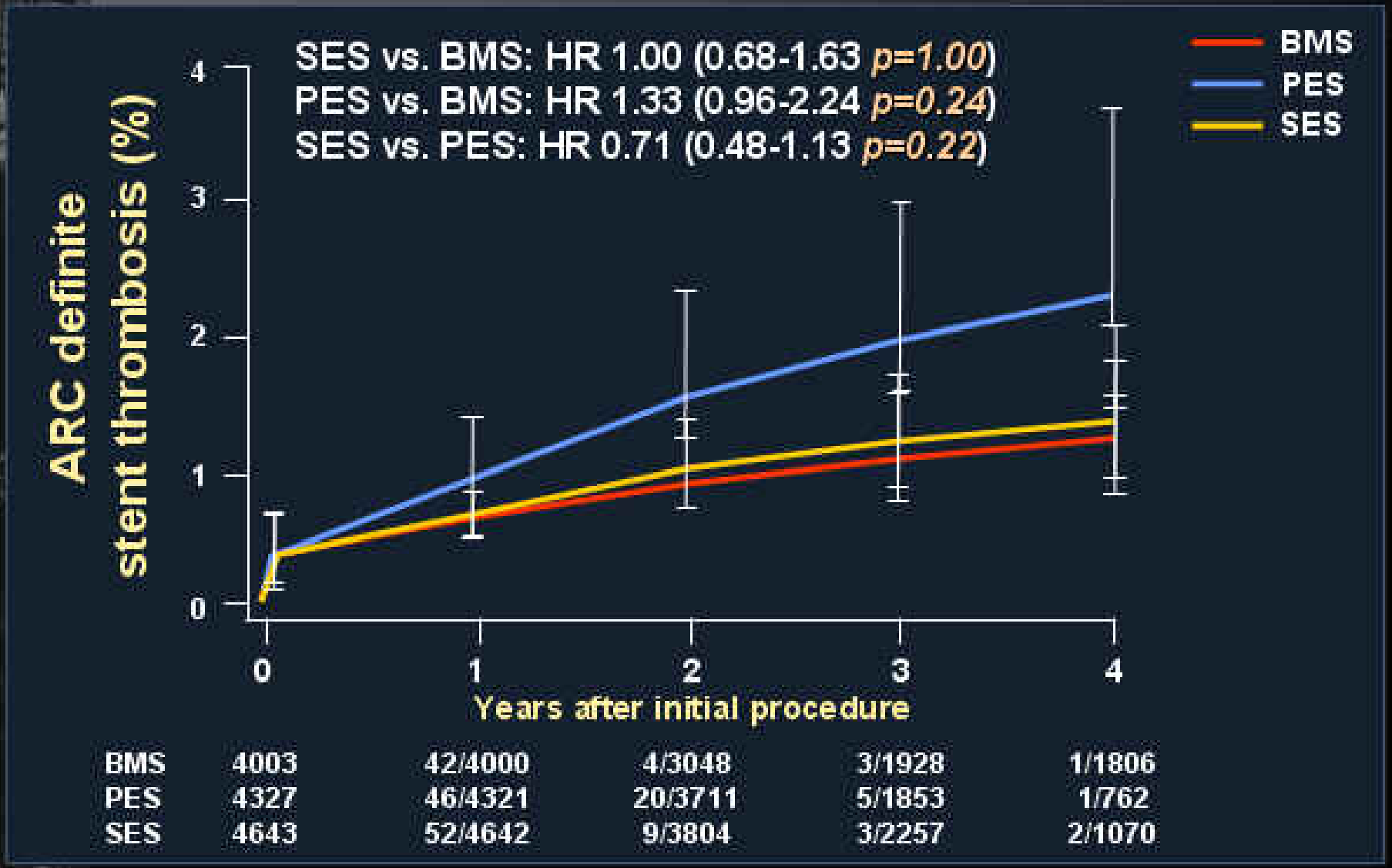
TLR Frequency



N of events/patients					
BMS	4763	820/4746	53/2795	22/1871	10/1543
PES	6328	448/6280	98/3950	15/1999	6/832
SES	6621	356/6580	68/3801	16/2153	14/999

Stettler C et al. Lancet 2007;370:937-48

Network meta-analysis: 38 trials, 18,023 pts
Stent Thrombosis



BMS	4003	42/4000	4/3048	3/1928	1/1806
PES	4327	46/4321	20/3711	5/1853	1/762
SES	4643	52/4642	9/3804	3/2257	2/1070

Stettler C et al. Lancet 2007;370:937-48

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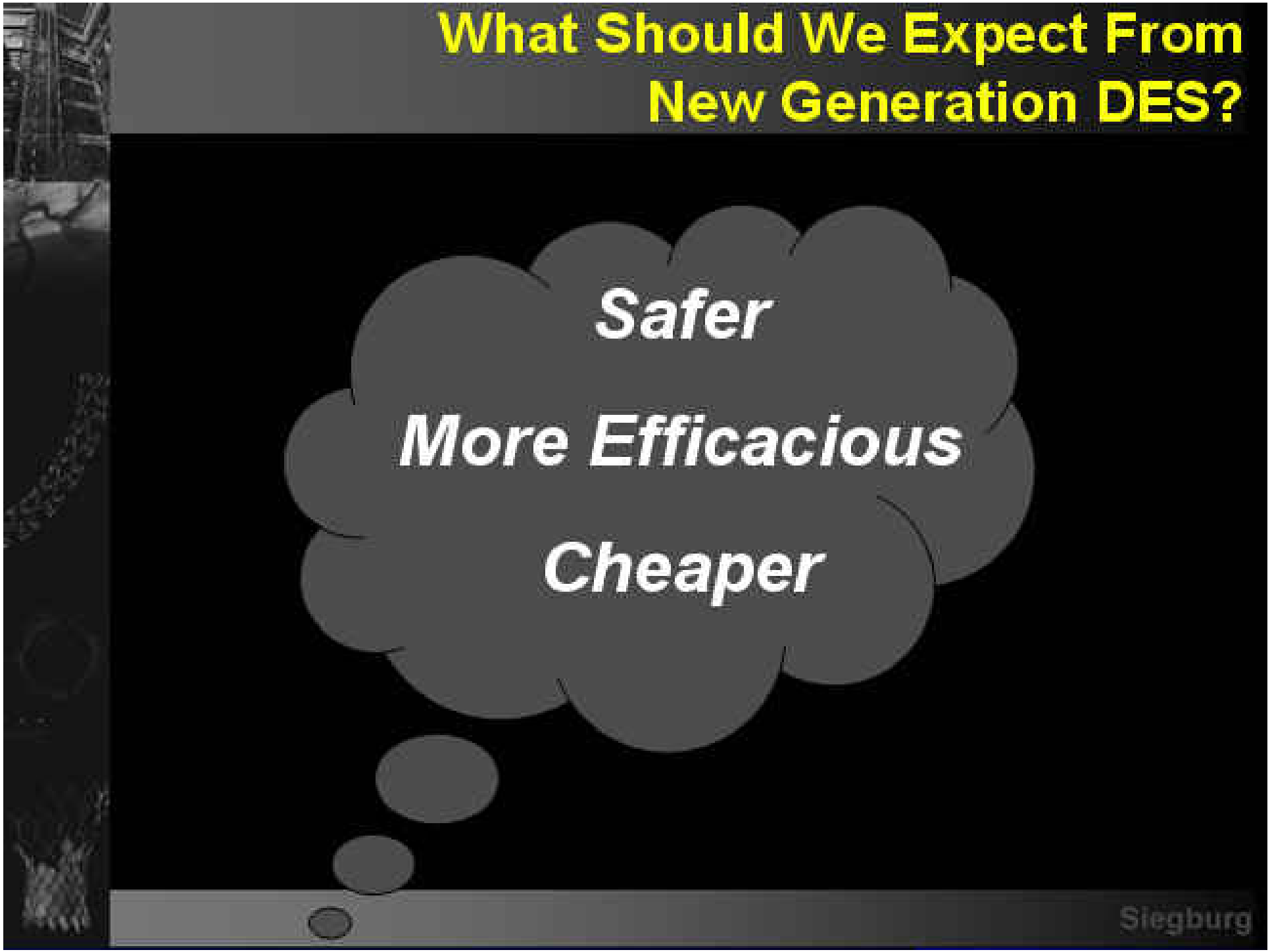
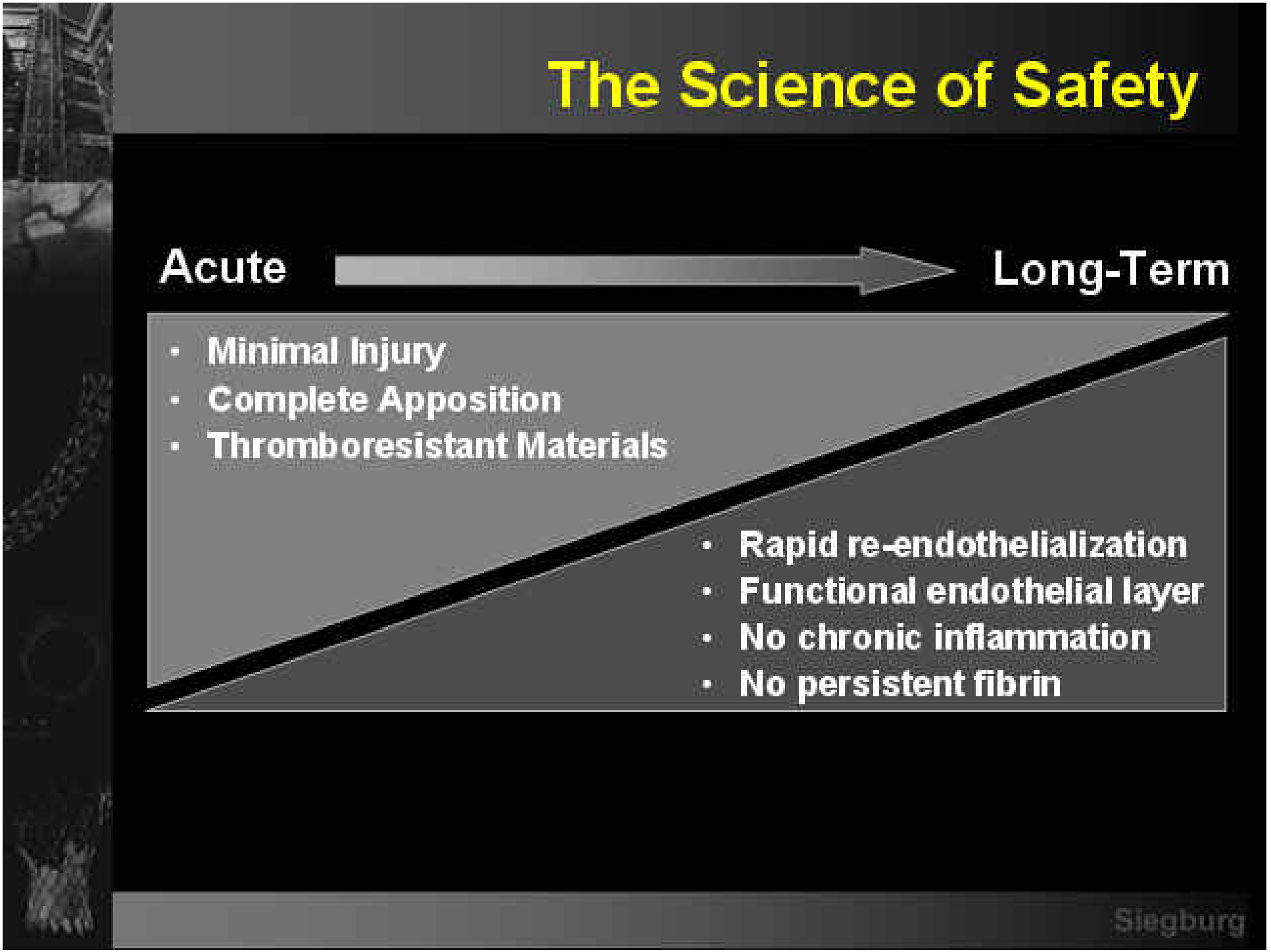
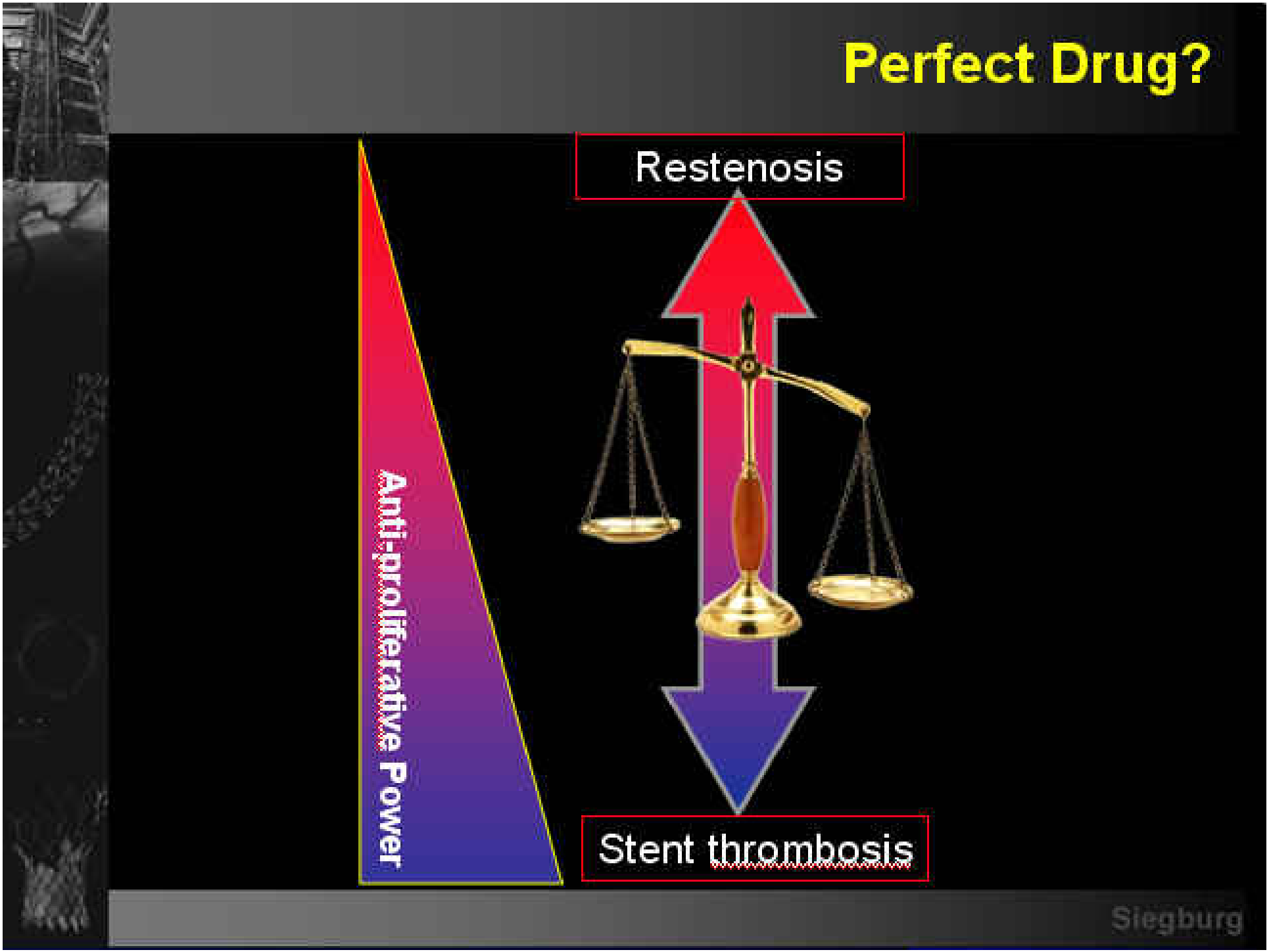
What Should We Expect From New Generation DES?



The Science of Safety



Perfect Drug?



The Science of Acute Safety

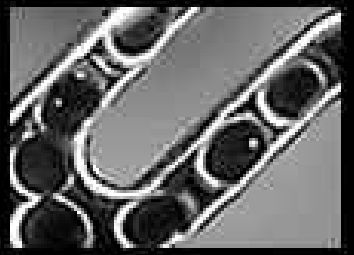
Maximizing Acute Safety	Desired Attributes
• Minimal Injury	• Thin Struts • Low Stent to Shoulder
• Complete Apposition	• Conformable Stent Pattern
• Thromboresistant Materials	• **Polymer / No Polymer** • Implant

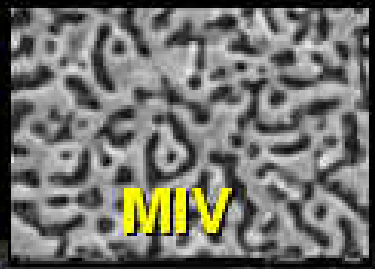
The Science of Long Term Safety

Maximizing Long-term Safety	Desired Attributes
• Rapid Re-endothelialization	• Complete coverage • Decreased VEGF Production • **Polymer / No Polymer**
• Functional endothelial layer	• Intact endothelial layer • **Polymer / No Polymer**
• Minimal inflammation	• No persistent foreign body response • Lack of medial necrosis • No positive remodeling • **Polymer / No Polymer**

Advanced Approaches to Drug Release

- Bioabsorbable polymers
- Bioabsorbable stents
- Controlled polymer application
- Non polymer release





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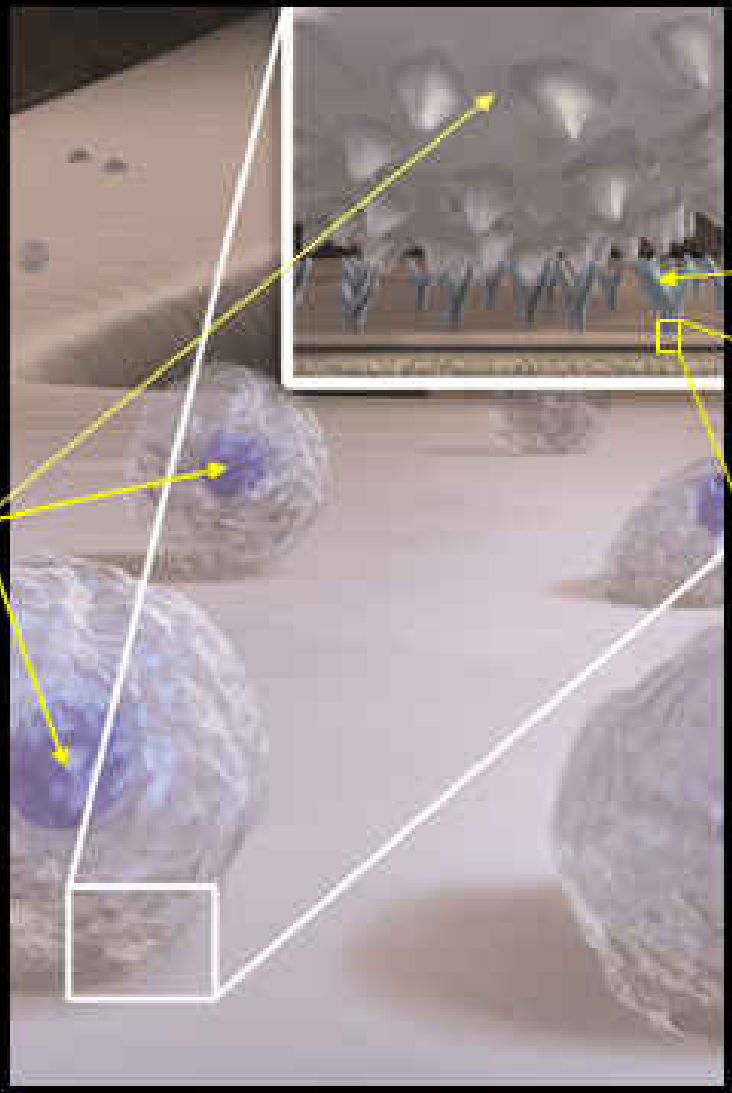
Endothelial Progenitor Cell Capture Coating Technology - Orbus Neich Genesis



Captured EPC Cells on Surface

CD34 Antibody Layer

Intermediate Layer

Stent Adhering Bottom Layer

Stent Surface

PROTEX Coronary Stent System

FINALE prohealing coating
Inversion Point™ stent technology
Thin strut, cobalt alloy stent (77 µm)
Ultra-low profile (0.034”)
Outstanding deliverability
Short-term antiplatelet therapy

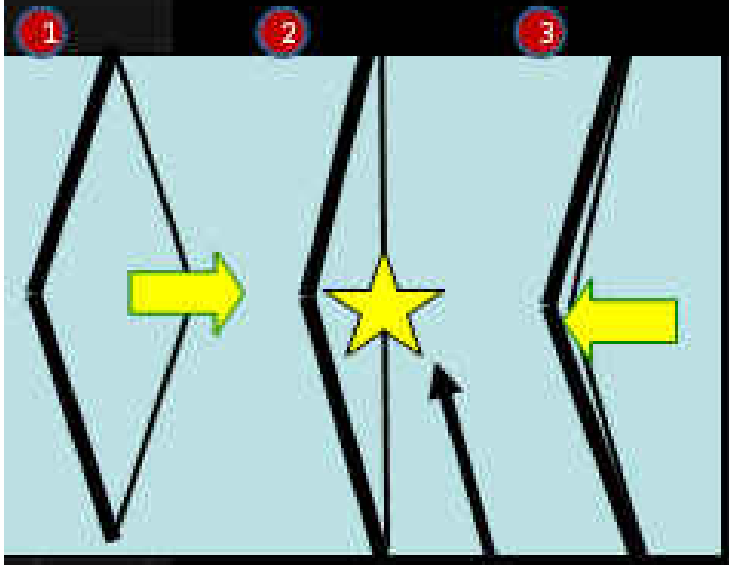
PROTEX Stent

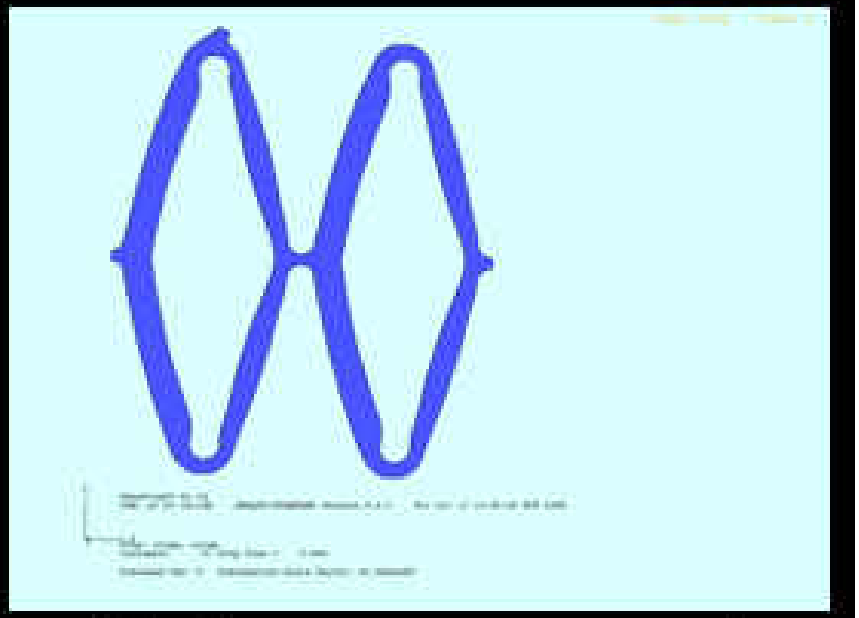
FINALE Coating
Nuclear stain shows complete strut coverage

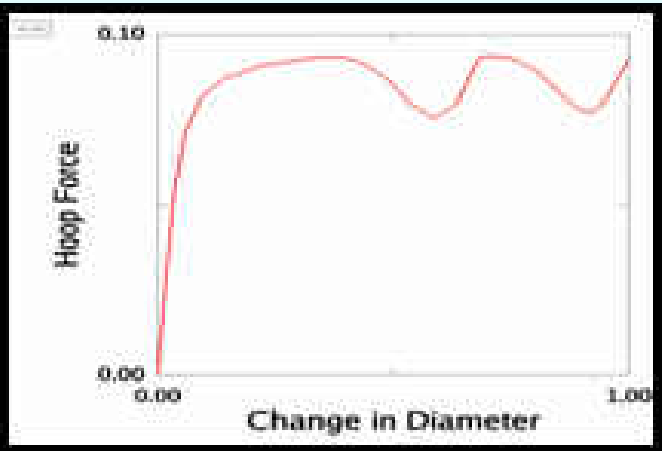
CAUTION – Investigational device. Device not available for sale.

Inversion Point Technology

STENT CELL CRIMP STAGES







Resistance to crimping reverses at the Inversion Point → Cell wants to close

★ Inversion Point ➡ Cell's Direction of Force

CAUTION – Investigational device. Device not available for sale.

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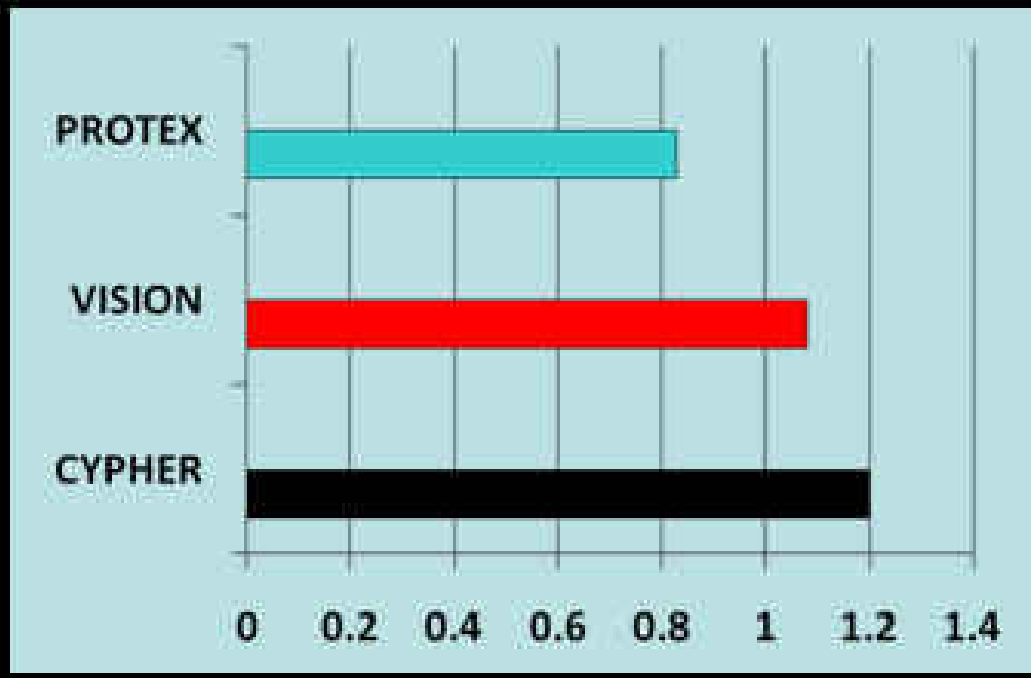
Lowest Existing Front-line Coronary Stent Crossing Profile



CAUTION – Investigational device. Device not available for sale.

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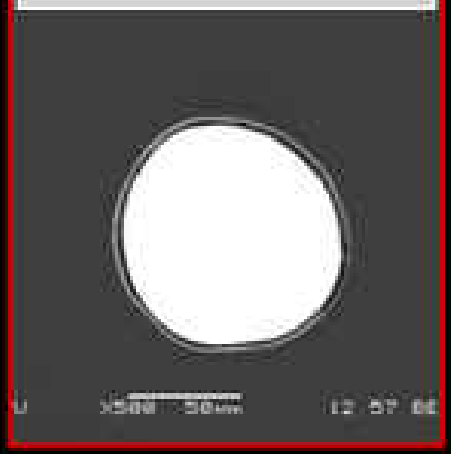
Minimal Injury

Minimizing Strut and Polymer Thickness

CYPHER®	TAXUS® Liberté	ENDEAVOR	XIENCE V
			
Strut Thickness:	Strut Thickness:	Strut Thickness:	Strut Thickness:
140 µm	**97 µm**	**91 µm**	**81 µm**
Polymer Thickness:	Polymer Thickness:	Polymer Thickness:	Polymer Thickness:
12.6 µm	**17.8 µm**	**4.8 µm**	**7.8 µm**

3.0 mm diameter stents, 500x magnification

Data on file at Abbott Vascular.

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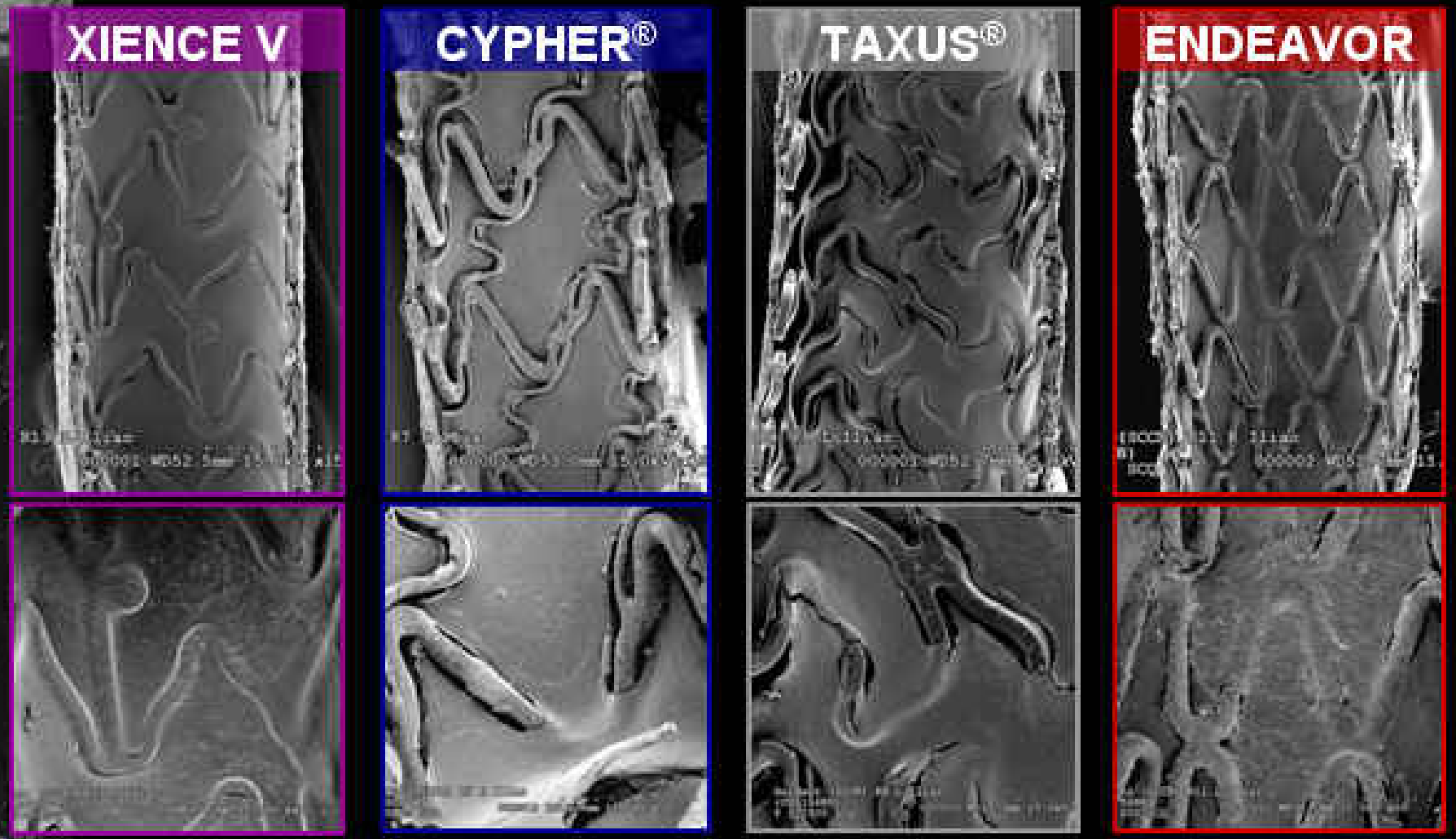
Rapid Re-endothelialization

14-Day Rabbit Iliac Study



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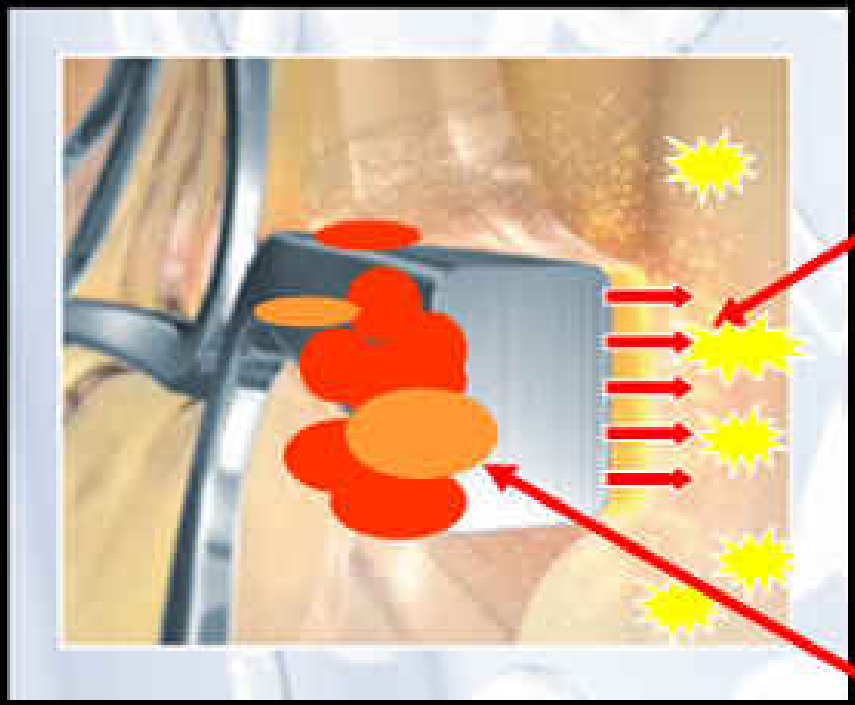
Abluminal Coating Bioabsorbable

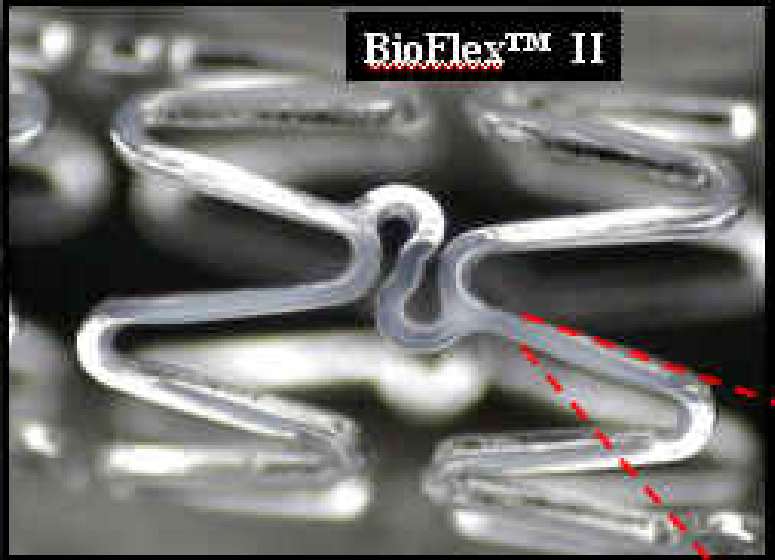


Drug only abluminally

Homing of endothelial Progenitor cells less impaired

BioMatrix® III Stent Platform

BIOMATRIX



Biodegradable Drug/Carrier:

- **Biolimus A9®** / Poly (Lactic Acid) 50:50 mix
- abluminal surface only (contacts vessel wall)
- 10 microns coating thickness
- degrades in 9 months releasing CO_2 + water

Stent Platform:

- stainless steel (112 microns)
- corrugated ring, quadrature-link™ design
- radius link enhances axial fatigue resistance

Not available for sale in the United Sates.

STEALTH I Cumulative Hierarchical MACE

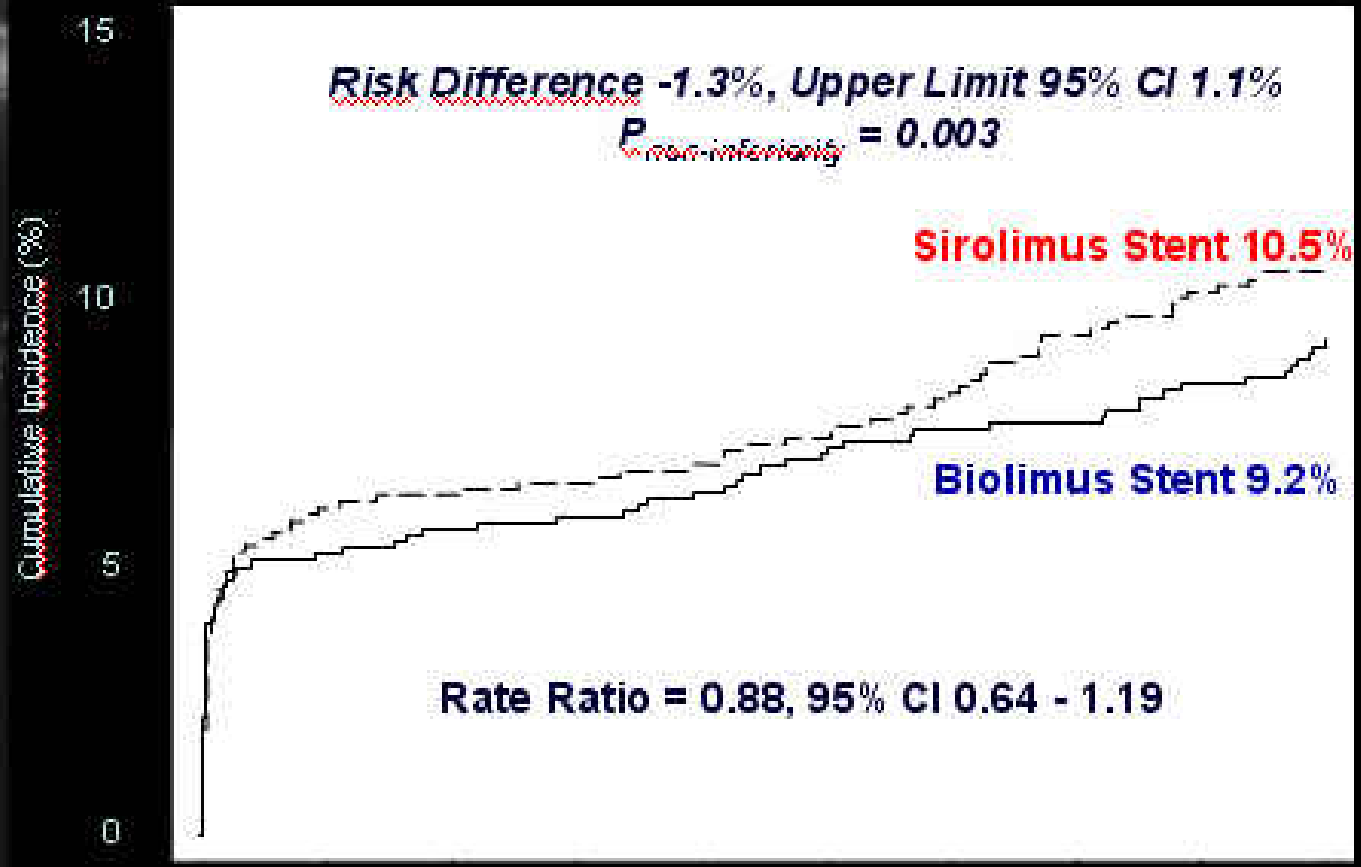
RESULTS	6 Months		24 Months	
	S-Stent	BioMatrix	S-Stent	BioMatrix
MACE	2.5%	3.8%	5.0%	5.1%
Death*	0.0%	0.0%	2.5%	1.3%
Q Wave MI	0.0%	1.3%	0.0%	1.3%
Non-Q Wave MI	2.5%	1.3%	2.5%	1.3%
TLR-CABG	0.0%	0.0%	0.0%	0.0%
TLR-PTCA	0.0%	1.3%	0.0%	1.3%
Stent thrombosis	**0.0%**	**0.0%**	**0.0%**	**0.0%**

*Death events were noncardiac: 1 diabetic foot syndrome (S-Stent) and 1 acute leukemia (BioMatrix)

STEALTH I - Stent Thrombosis out to 4 years

	BioMatrix™ 73 Patients	S Stent™ 37 Patients	*P*
Stent Thrombosis	1.4% (1/73)	0.0% (0/37)	> 0.99
Acute (≤ 24 hrs)	1.4% (1/73)	0.0% (0/37)	> 0.99
Subacute (≤ 30 d)	0.0% (0/73)	0.0% (0/37)	-
Late (> 30d)	0.0% (0/73)	0.0% (0/37)	-
Very Late (> 1yr)	0.0% (0/73)	0.0% (0/37)	-

Primary Endpoint
Cardiac Death, MI, or TVR @ 9 months

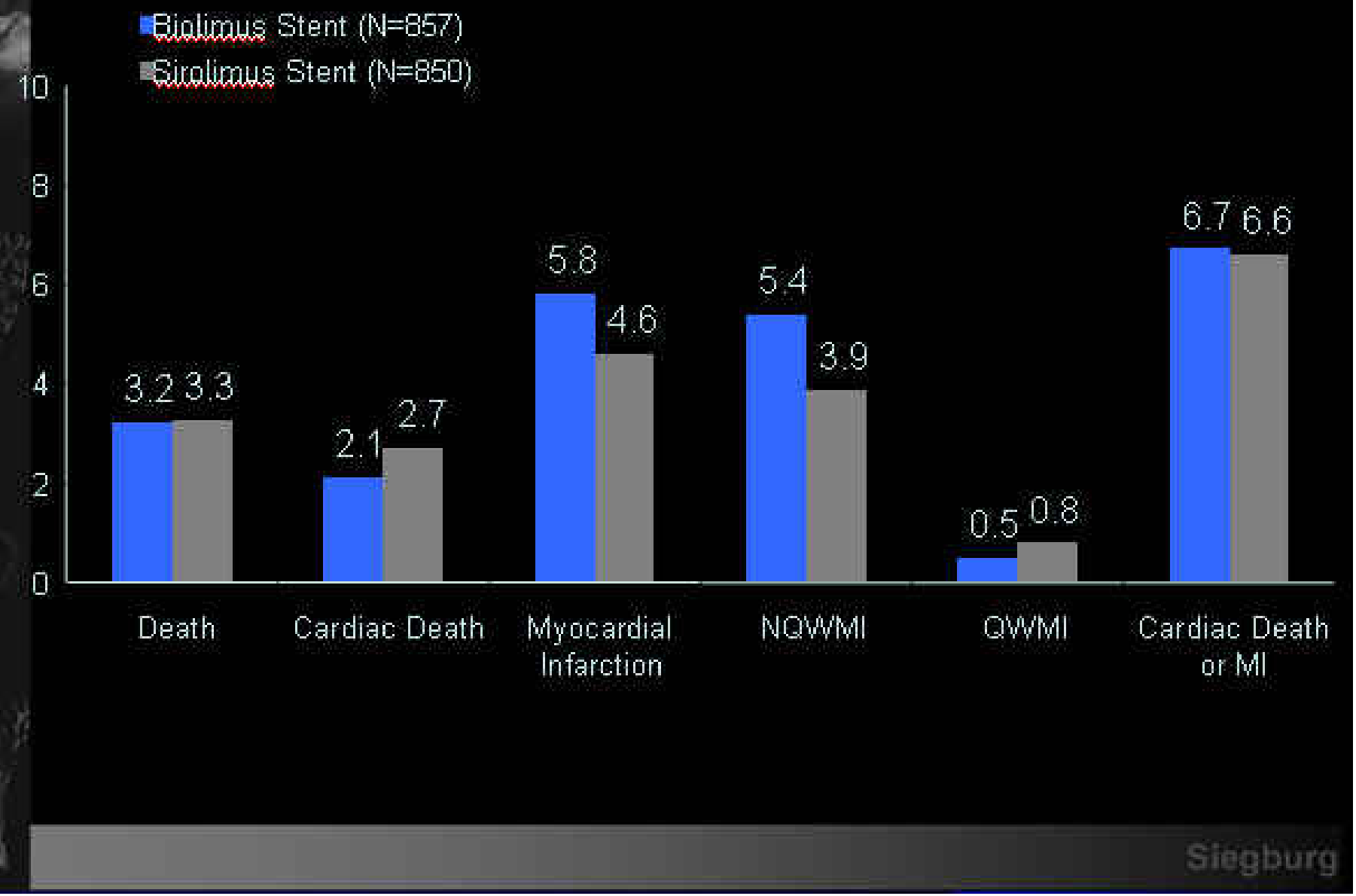


No. at risk

B[illegible]	806	798	796	792	784	779	777	771	761
S[illegible]	791	786	784	781	777	771	758	751	746

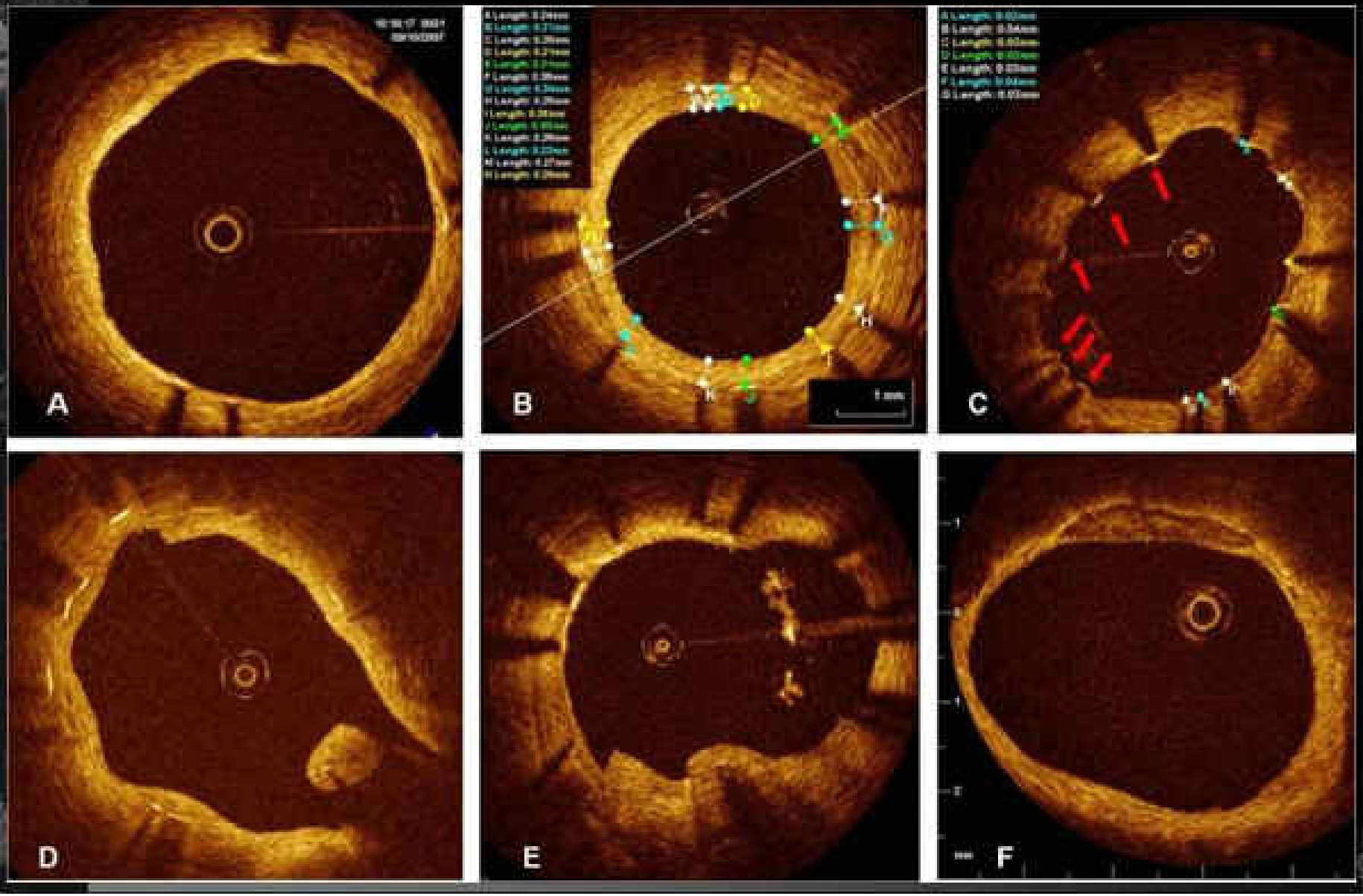
LEADERS

SAFETY ENDPOINTS @ 12 MONTHS



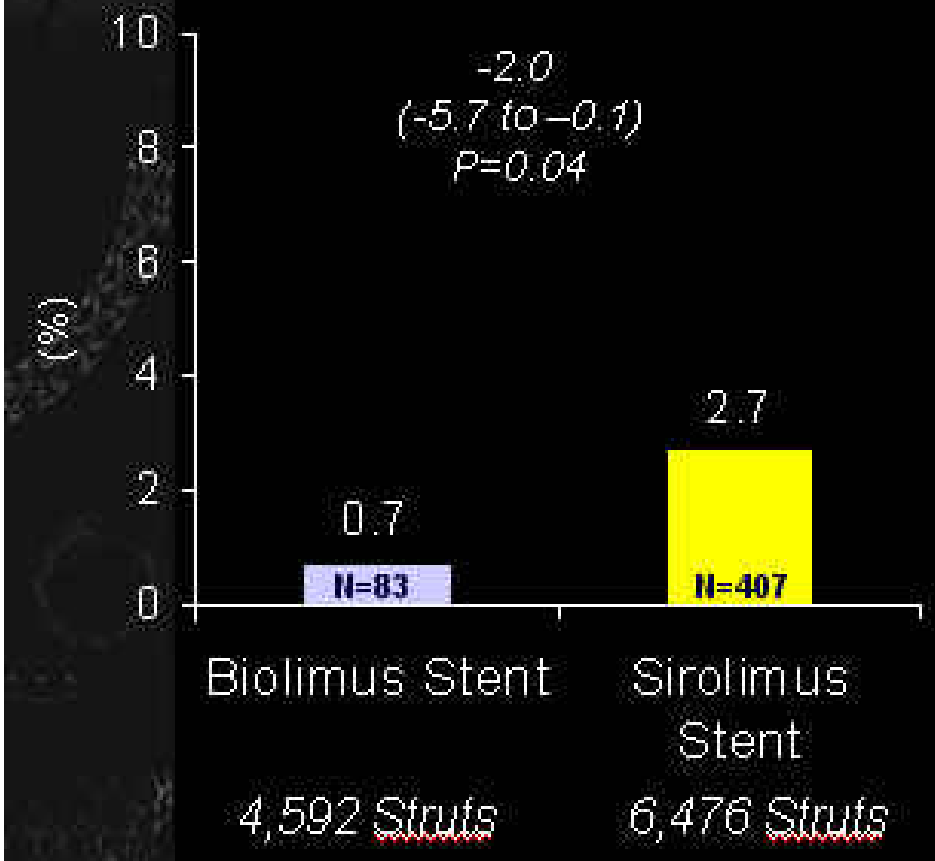
LEADERS - OCT Substudy

C Di Mario, PW Serruys.submitted

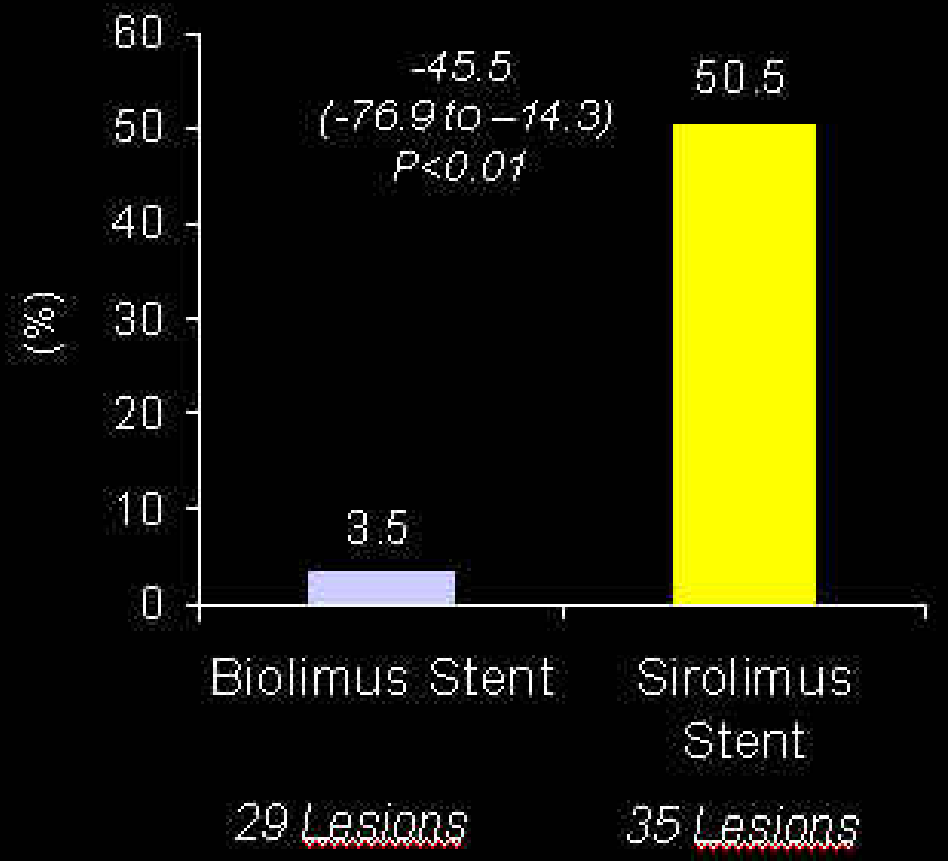


LEADERS - OCT Substudy

Uncovered Struts



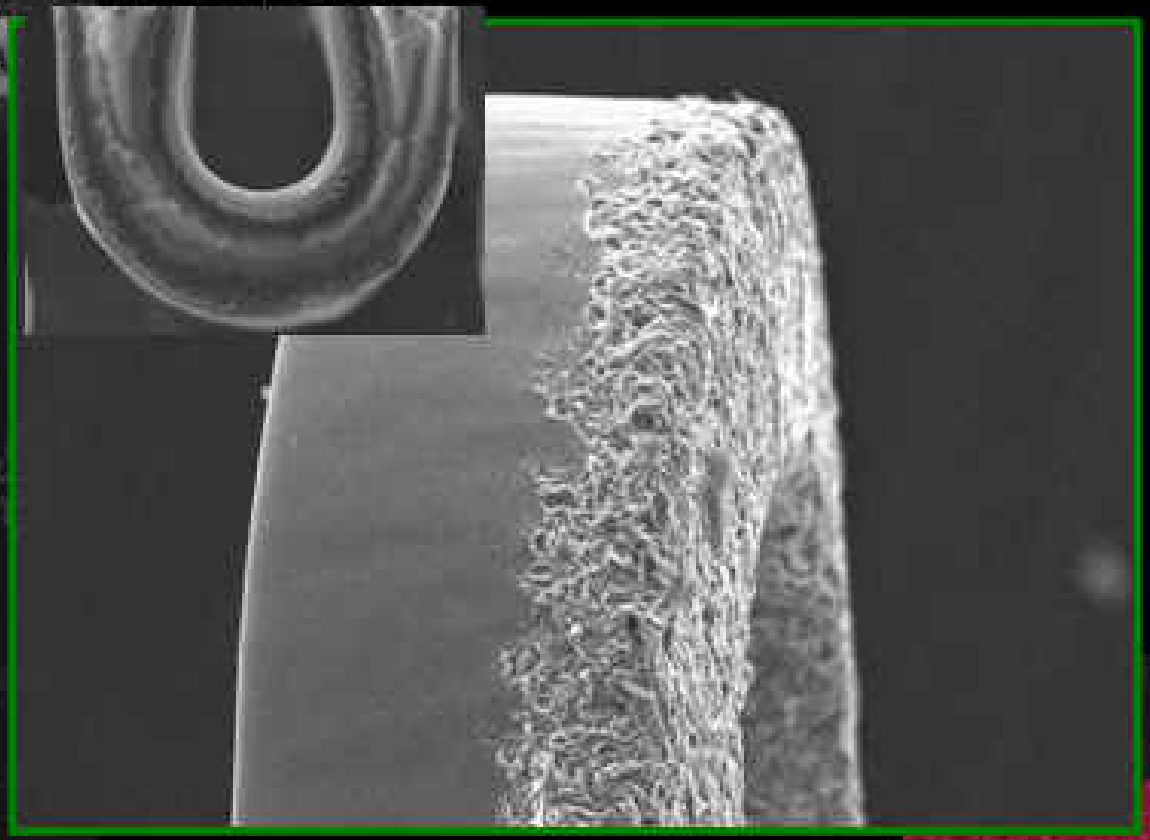
Lesions With At Least 5% Uncovered Struts



Sensitivity Analysis: adjusted for lesion length, RVD, N of implanted stents, stent overlap

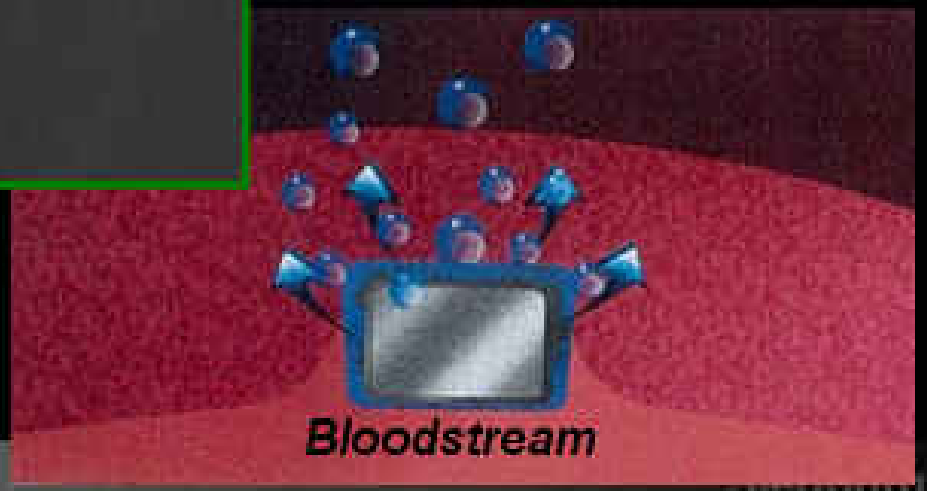
BioMatrix Freedom Stent
Biolimus A9® Drug

BIOMATRIX



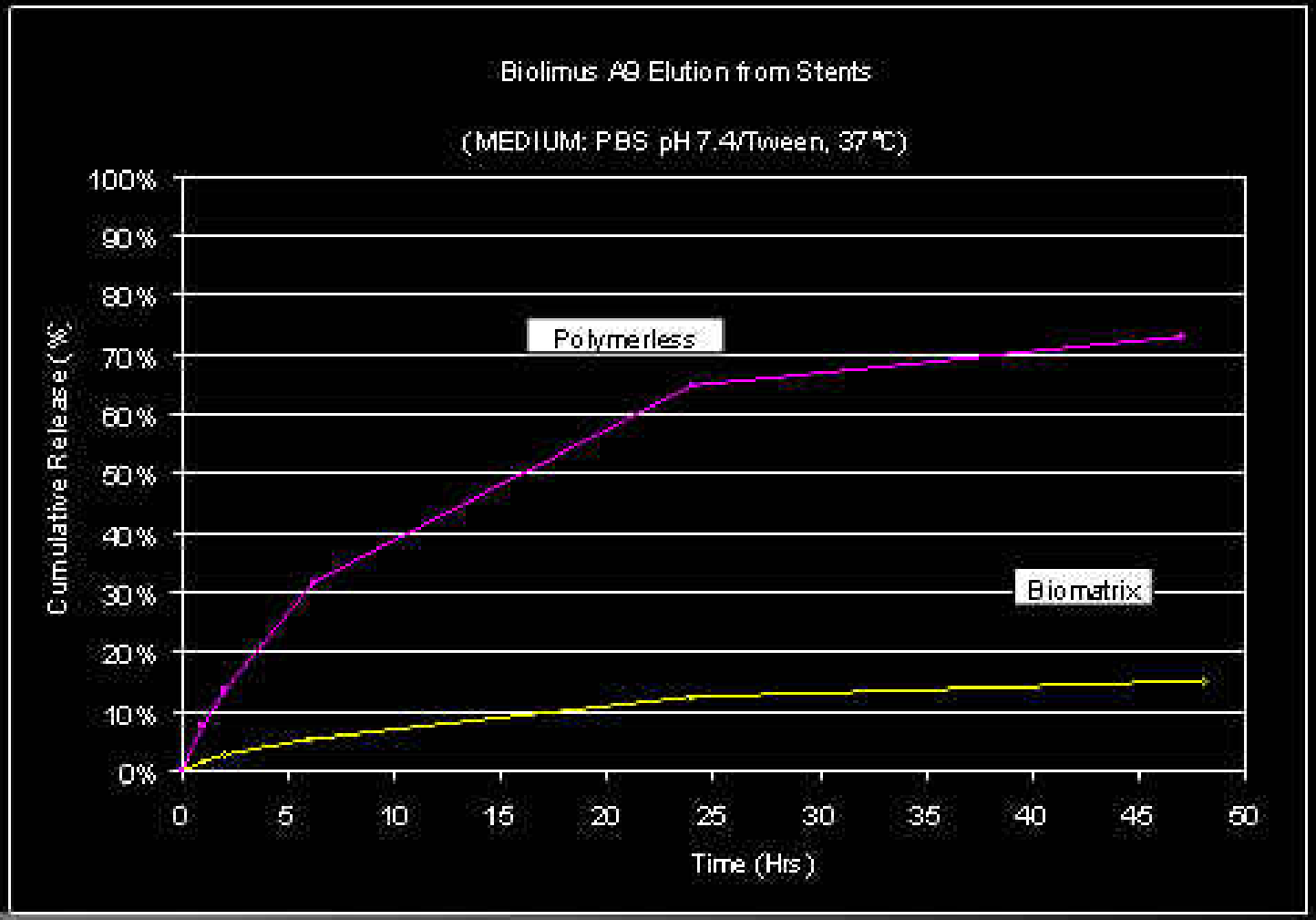
- Abluminal drug coating targets blood vessel walls
- Small amounts are released into circulation

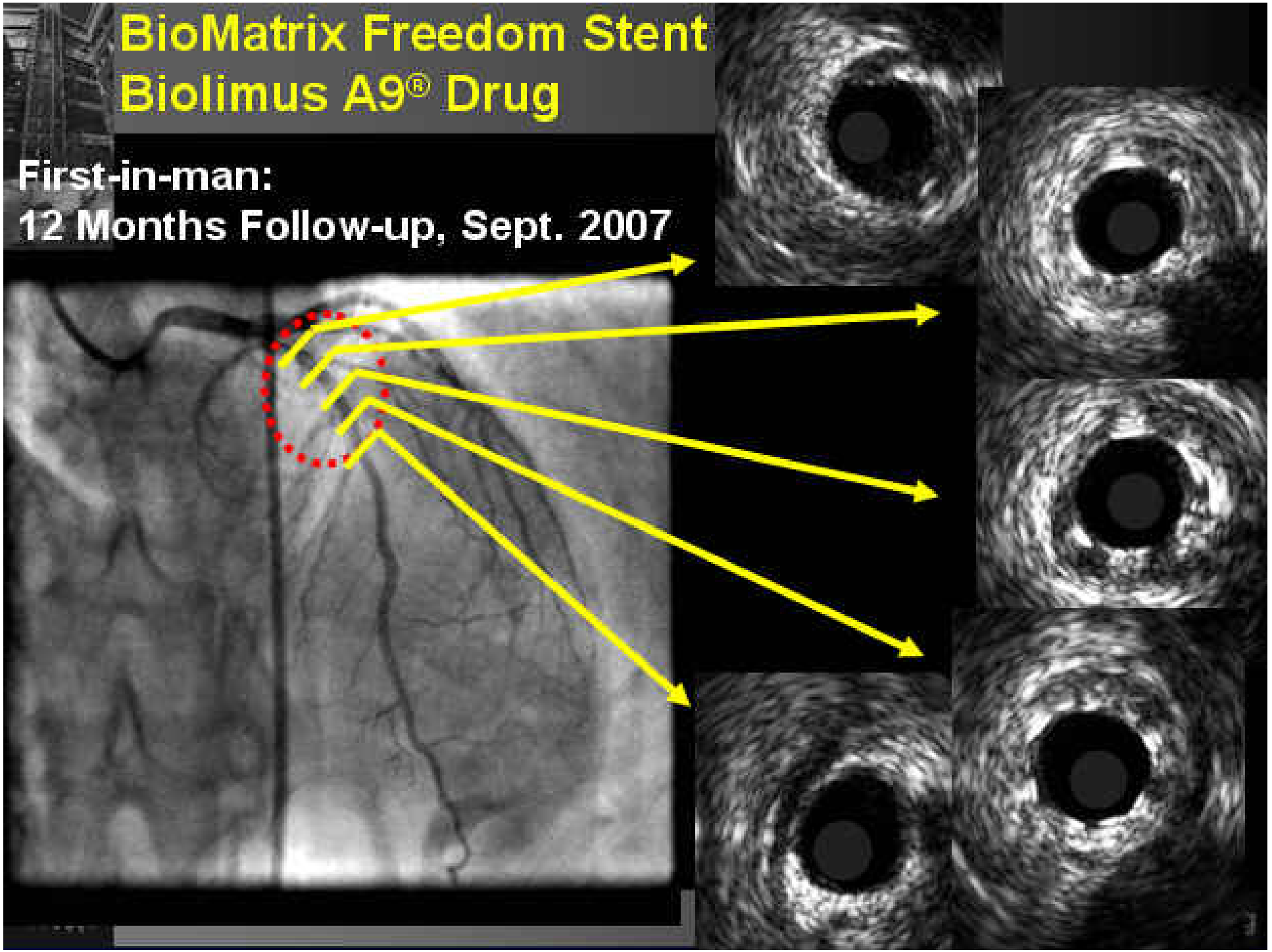
Pure Biolimus A9 impregnated in metal stent surface



Biolimus A9 Release From Freedom Stent vs. BioMatrix® II

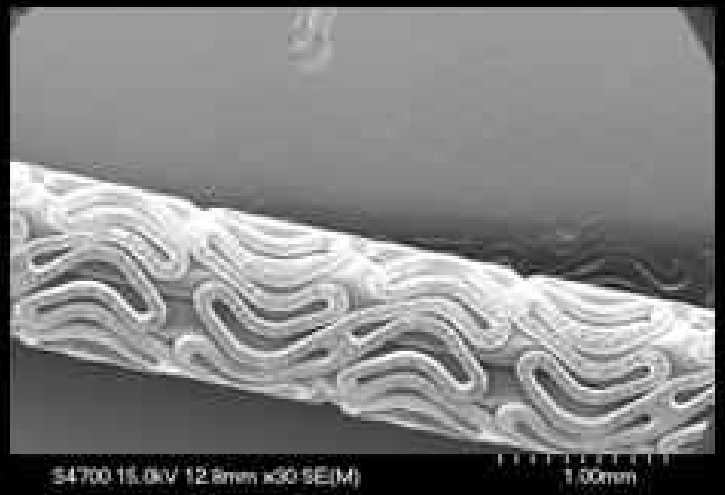
BIOMATRIX

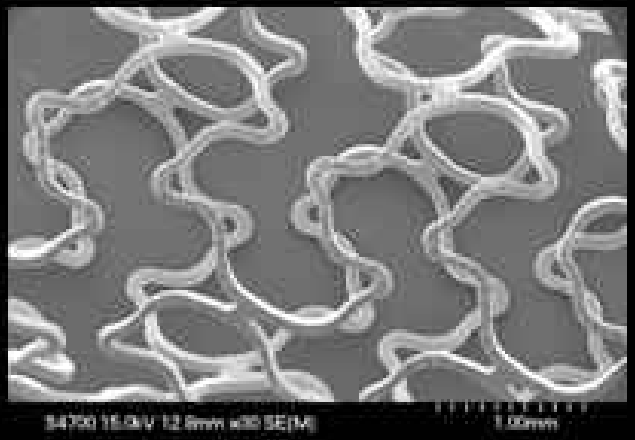



BioMatrix Freedom Stent
Biolimus A9® Drug
First-in-man:
12 Months Follow-up, Sept. 2007

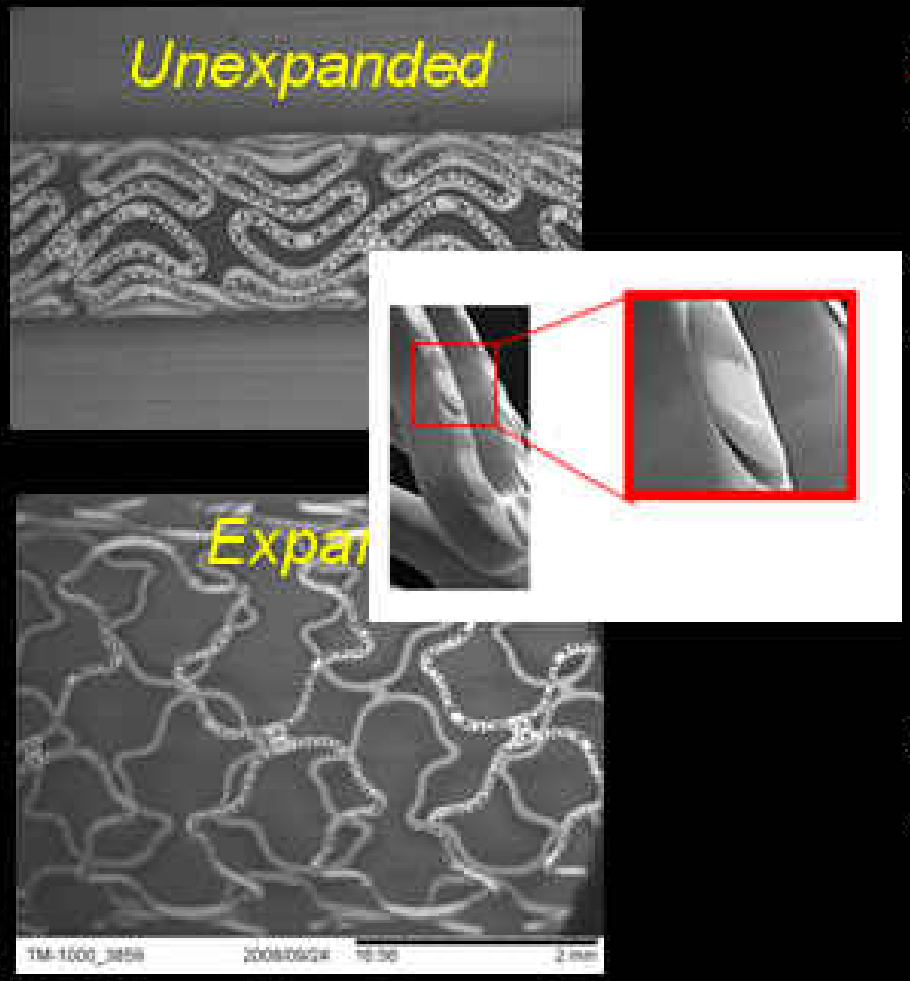
JACTax Stent –Labcoat Proprietary Technology/Product

- Liberte stent coated "out of the box"
- Exclusively Abluminal JACoating (no capping)
- 20 mcg of coating/16mm stent
- Coating contains 10 mcg of DLPLA and 10 mcg paclitaxel
- Approx. 2700 microdroplet surface structures/16 mm stent





Properties of the JACTAX Stent



JA®Coating

- *9.2 µg. of Paclitaxel and 9.2 µg. DLPLA (16 mm)*
- *2700 microdots (16 mm)*
- *Mass of polymer approx 3.4 ng. per microdot*
- *< 1 micron thick, abluminal and low molecular weight biodegradable polymer decreases persistence time*

Stent platform

- *Liberté ™pre-mounted stent (Boston Scientific)*

JACoating vs. Reservior - illustration

JACoating is approx. 1 micron thick vs
Reservior polymer approx. 75 micron thick

9 Month Angiographic Outcome

Pre Procedure	N=72 patients
RVD	2.72 ± 0.44
MLD	0.80 ± 0.38
% DS	71.71 ± 11.26
9 month	**N=72 patients**
RVD	2.74 ± 0.44
MLD in-stent	2.27 ± 0.54
MLD in-segment	2.05 ± 0.51
% DS in-stent	17.15 ± 14.01
% DS in-segment	25.43 ± 12.33
Binary restenosis in stent (%)	**4.2**
Binary restenosis in segment (%)	**5.6**
Late Loss in-stent	**0.32 ± 0.43**

*Includes one pt with early TVR in branch vessel

OCT Sub study – 9 mo f/u

Analysis performed on:

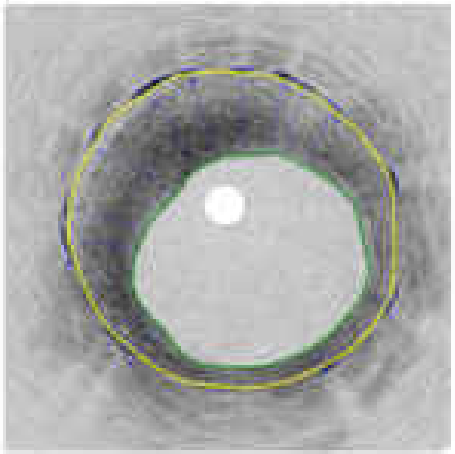
- 13 Patients
- 14 pullbacks*
- Representative cross-sections every ~1 mm within stent
- 159 Cross-sections
- 2650 Struts

* Case 017 had two stents

Segmentation

- Lumen
- Stent
- Strut

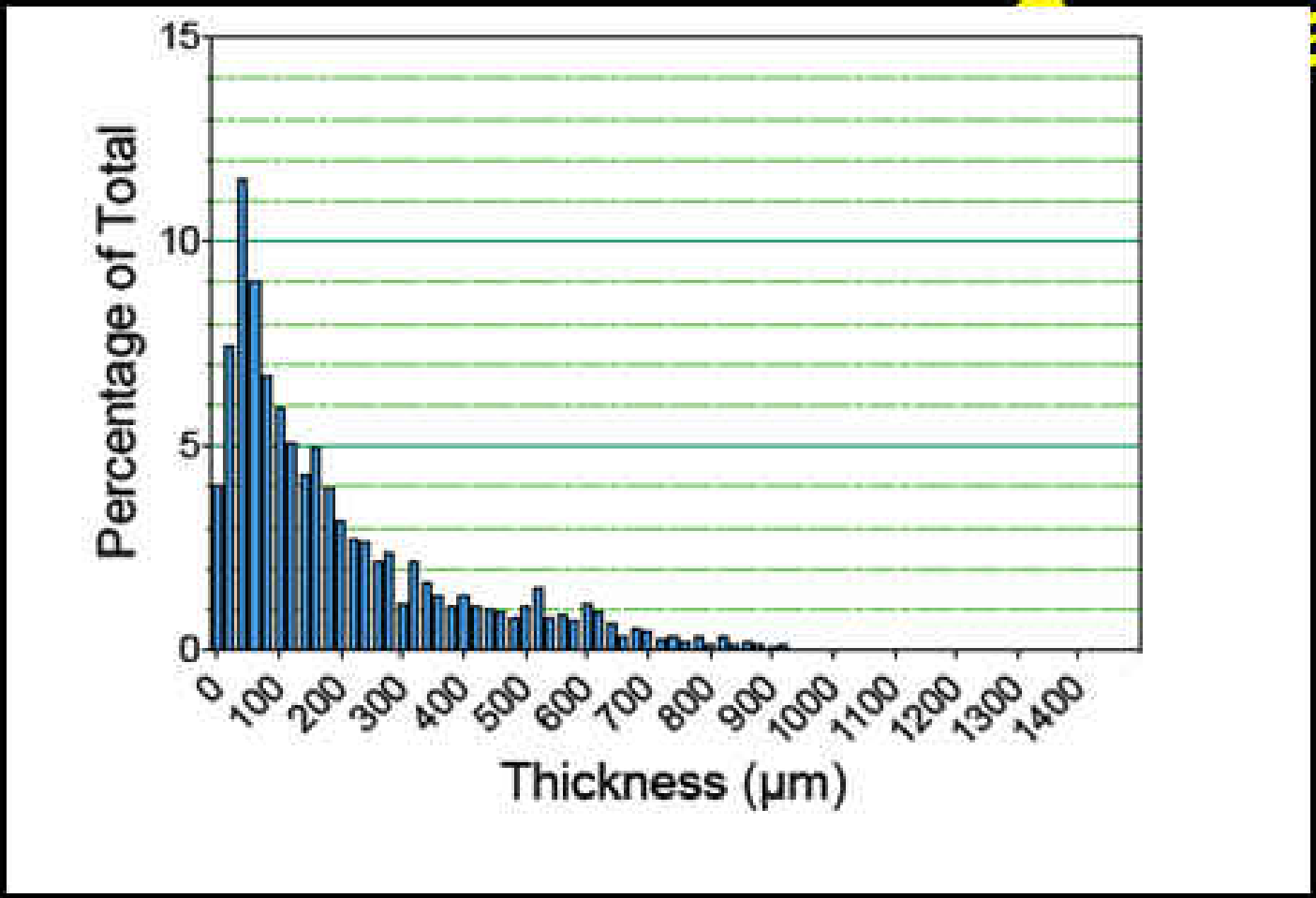
- Each strut is individually labeled and addressable



Reference Landmarks

Wellman-MGH Intracoronary OCT Core Lab

Cumulative Strut

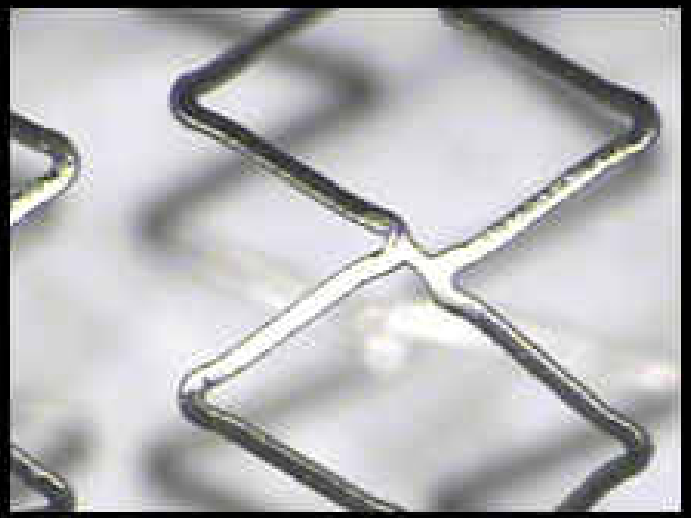


> 96 % coverage at 20 micron resolution – 2650 struts analyzed

The Elixir Stent

Stent Design

- Cobalt-Chromium alloy
- 8 crown design for optimal scaffolding
- 0.0032" strut thickness



Controlled Release Technology

- Methacrylate polymer family
  - Durable
- Biocompatible
- History of clinical use on vascular implants dose
- Reduce dose (85 µg) and polymer load (<3 microns)

RESULTS (4 months f/u)

Quantitative Coronary Angiography

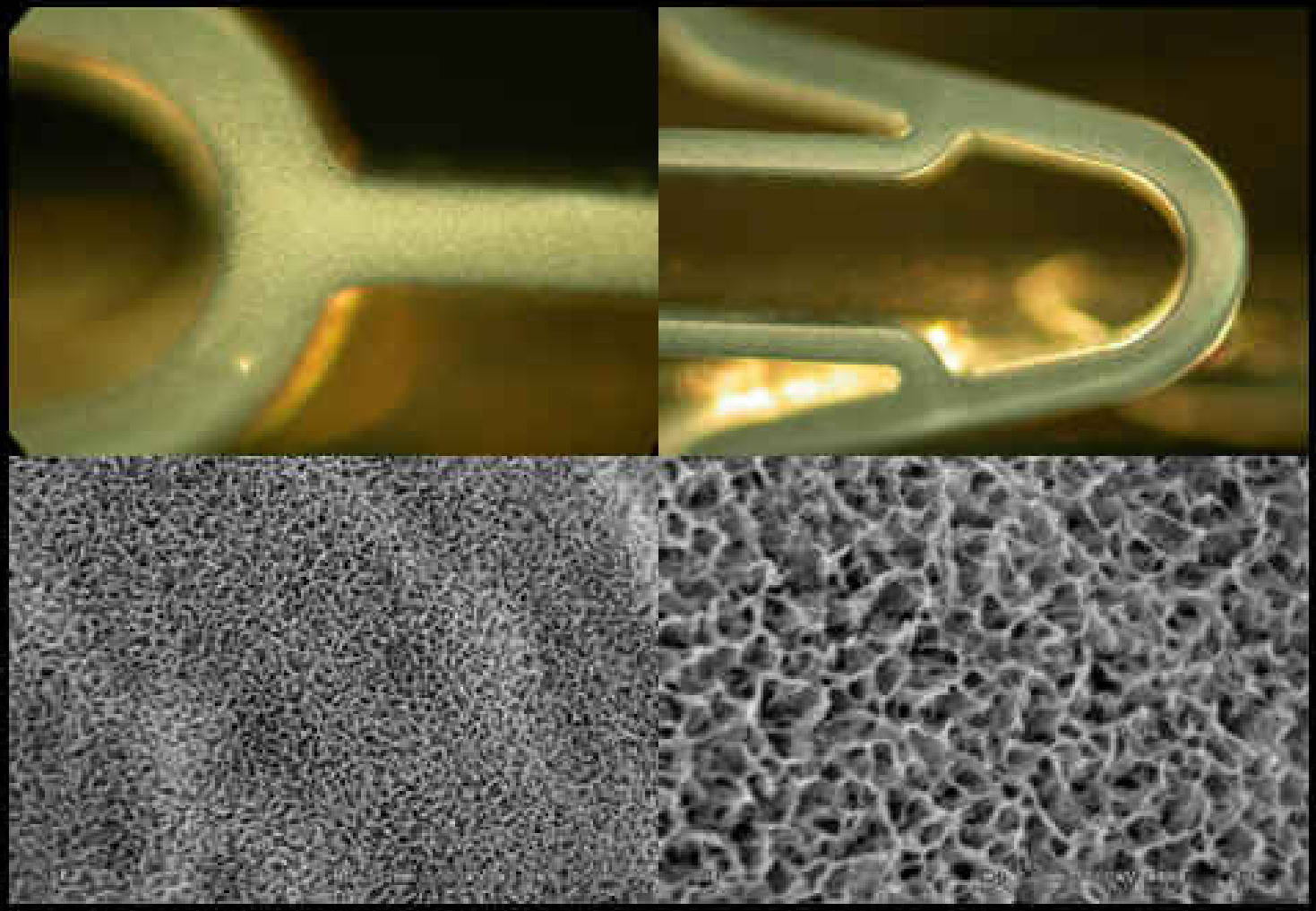
Variables	Lesions (n = 15)
Pre-procedure	
Reference vessel diameter, mm	2.7 ± 0.4
Lesion length, mm	8.7 ± 3.7
Minimum lumen diameter, mm	1.0 ± 0.3
Diameter stenosis, (%)	62.5 ± 8.6
Post-procedure	
Minimum lumen diameter, mm	2.5 ± 0.3
Diameter stenosis, (%)	7.4 ± 9.6
Acute gain, mm	1.5 ± 0.3
4-month follow-up	
Minimum lumen diameter, mm	2.3 ± 0.4
Diameter stenosis, (%)	12.5 ± 13.1
Lumen loss, mm	0.15 ± 0.29
Binary restenosis, n(%)	0

IVUS Volumetric Analysis
Baseline / 4 month follow-up

IVUS variables	Baseline N= 15 P	4-month follow-up N= 15 P
Vessel Volume (mm^3)	251.2 ± 78.8	259.7 ± 86.1
Stent Volume (mm^3)	130.1 ± 39.7	134.0 ± 39.5
Lumen Volume (mm^3)	129.9 ± 39.7	130.8 ± 40.0
NIH Volume (mm^3)	N/A	3.2 ± 2.8
% Stent Obstruction	N/A	2.7 ± 2.7

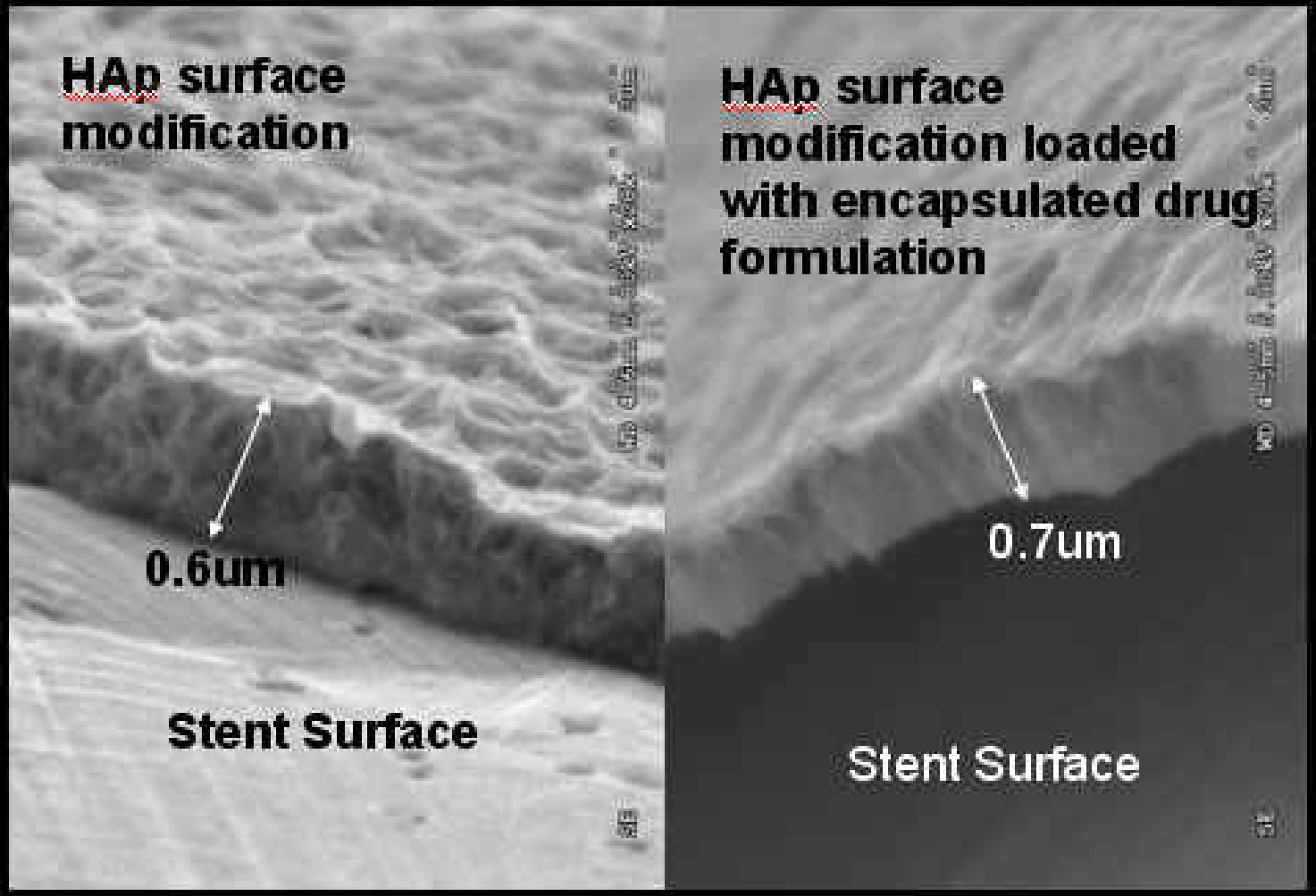
"MIV"

3D MicroPorous Nanofilm HydroxyHepatide (HAp)



HAp Drug Delivery System

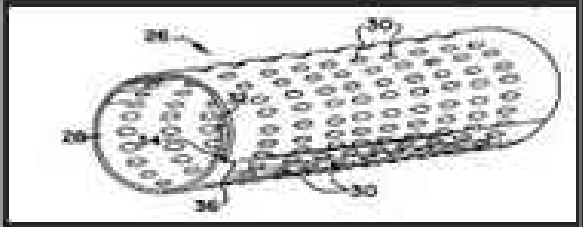
(coated with Sirolimus)



IVUS Volumetric Analysis
Baseline / 4 month follow-up

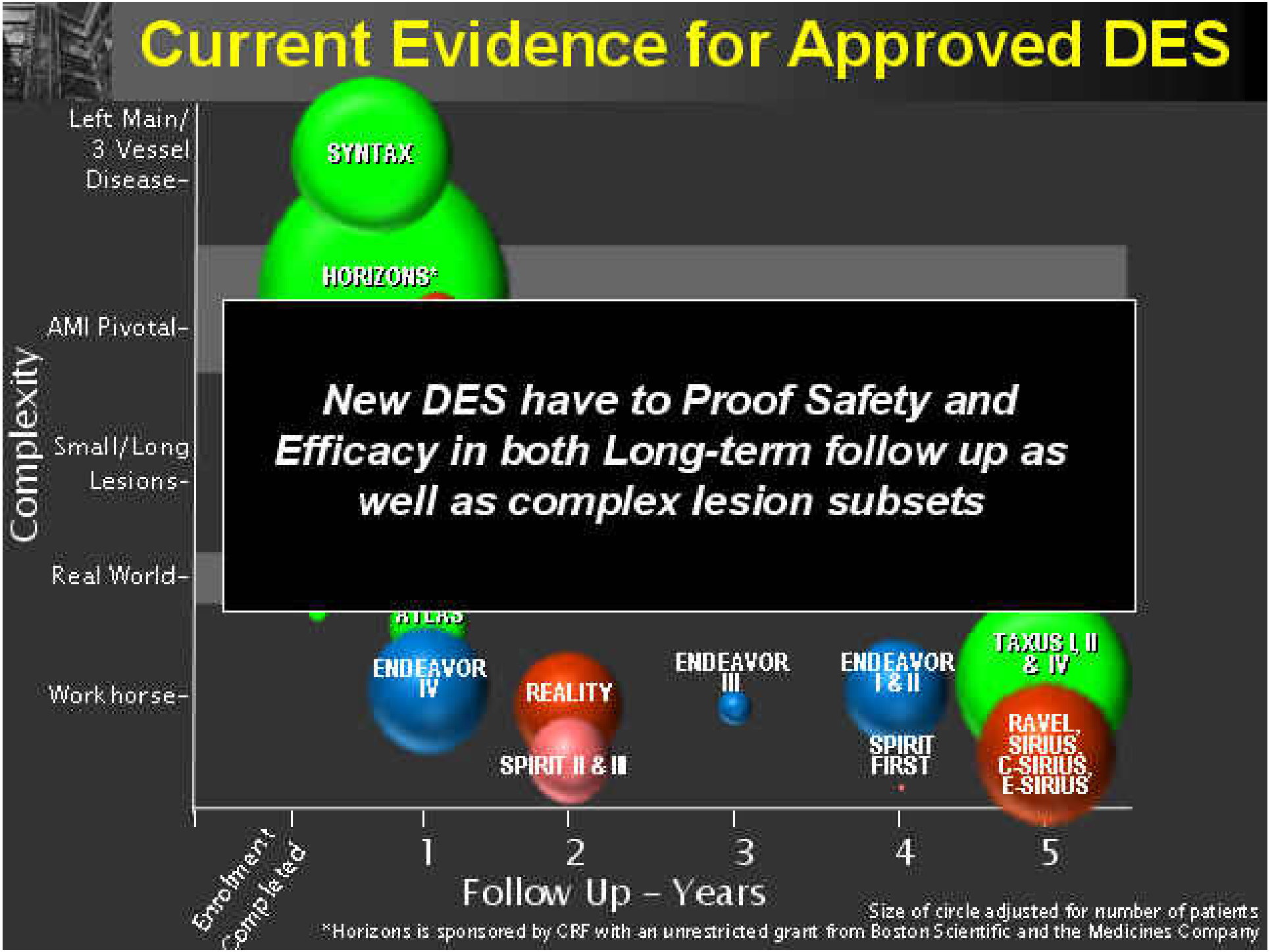
IVUS variables	Baseline N= 15 P	4-month follow-up N= 15 P
Vessel Volume (mm^3)	276.7 ± 117.1	276.6 ± 84.8
Stent Volume (mm^3)	145.7 ± 14	142 ± 0.5
Lumen Volume (mm^3)	145.8 ± 47.5	138.8 ± 33.5
NIH Volume (mm^3)	N/A	**4.1 ± 3.4**
Mallapposition Volume (mm^3)	0.15 ± 0.5	**0.09 ± 0.3**
% Stent Obstruction	N/A	**2.8 ± 2.4**

Biodegradable Stents

Company	Picture	Polymer/Drug	Features
Guidant (BVS)		All biodegradable polymers (PLLA) with everolimus	Self expanding and balloon expandable designs.
Igaki-Tamai		PLLA: Transilast	Zig-zag design deployed with a heated balloon FIM Trial; 50 pts
Reva Medical		Poly (DTE carbonate) with Iodine for radiopacity	Design has ratchet links for deployment
Biosensors		Poly (L or DL) lactide with BA9	Self expanding stent with a retractable sheath delivery catheter


There are several new stars which will play an important role in the future

Current Evidence for Approved DES




Thank you
Siegburg