


# OMED COLORECTAL CANCER SCREENING COMMITTEE MEETING

Saturday, May 17, DDW San Diego, 2008

Presenter: Y. Chiu



**World Organisation of  
Digestive Endoscopy**

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**Colorectal Cancer Screening Committee Meeting**

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**A "PAP Smear" for Colorectal Cancer**  
Preliminary Results and Future Direction

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California Pacific Medical Center  
San Francisco, California  
Presentation at OMED Meeting  
DDW 2008, San Diego, California USA  
May 17, 2008

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**Disclosure**

- Nancy M Lee, Ph.D.
- James Bennington, M.D.
- Yanek S. Y. Chiu, M.D.
- Founders of IntelliGeneScan, Inc.

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**Outline**

- The Basic Science
  - Importance of altered gene expression in morphologically normal colon mucosa
- Findings from rectal biopsies compared to biopsies more proximal in the colon
- Findings from rectal biopsies compared with those from rectal smears

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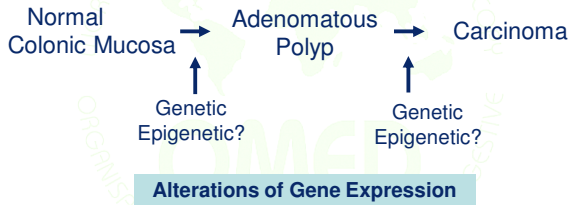
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**Epigenetic (Metabolic) Alterations in Colon Cancer Progression?**



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**Genes Selected for Expression Analysis by Real-time RT-PCR**

- NF-κB/inflammation pathway
- APC/β-catenin pathway
- Cell cycle/transcription factors
- Cell communication signals

(c-Myc, CD44, COX-1, COX-2, M-CSF-1, CXCR2, Cyclin-D, Gro-α, Gro-γ, IL-8, OPN, p21, PPAR-α, PPAR-δ, PPAR-γ)

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**Patient Information**

	Caucasian (%)	Asian (%)	AA (%)	Male/Female (%)	Mean Age (range)
Normal Controls (23)	44	52	4	52/48	61.3 (44-81)
Hx or FH History CA(37)	49	46	5	41/49	55.5 (35-83)
Polyps (25)	44	56	0	58/52	56.9 (46-77)
Cancer (12)	60	40	0	50/50	61.5 (43-85)

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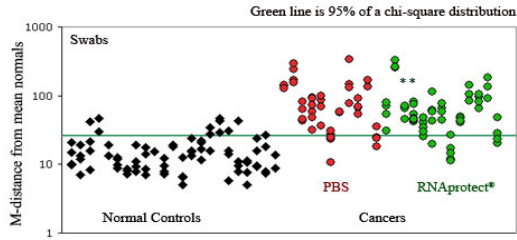
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**Normal controls vs. Cancer cases**



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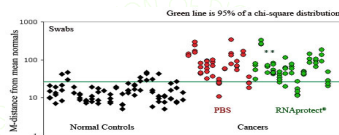
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Cancer Patients	Sex	Location of carcinoma	Stage
#1	m	Recto-Sigmoid	T3N1M0
#2	m	Rectum	T3N0M0
#3	f	Sigmoid	T3N1M0
#4	m	Ascending	T3N0M0
#5	f	Ascending	T1N0M0
#6	f	Sigmoid	T2N1M0
#7	f	Sigmoid	T2N1M0
#8	f	Sigmoid	T1N0M0
#9	m	Ascending	TisN0M0
#10	m	Ascending	T3N1M0
#11	m	Cecum	TisN0M0
#12	f	Ascending	T3N1M0

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**Statistical Analysis**

	Controls	Cancers		Controls	Cancers	
	17	0		17	0	
	6	11		6	13	
	Confidence Interval			Confidence Interval		
Accuracy	82%	65%	93%	83%	67%	94%
Sensitivity	100%	72%	100%	100%	75%	100%
Specificity	74%	52%	90%	74%	52%	90%
Positive predictive value	65%	38%	86%	68%	38%	87%
Negative predictive value	100%	80%	100%	100%	80%	100%

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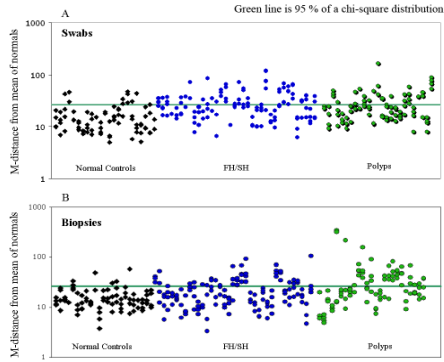
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### Rectal Swabs vs. Biopsies



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### Summary of Findings

- Normal appearing colonic mucosa may not be molecularly normal.
- Altered gene expression in our panel of 16 mRNAs as seen in rectal biopsies correlates with a cancer anywhere in the colon.
- Rectal biopsy shows similar pattern to swabs taken in the rectum.

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### Summary of Findings

- Rectal biopsy and rectal smear are similar in predictive values.
- Rectal smear can be easily obtained from patients without a mechanical bowel preparation.

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## Conclusions

- Though our series is small, the differences in normal and abnormal values are highly statistically significant.
- If our data continue to be validated, the rectal pap smear performance characteristics could be evaluated in large average risk populations

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## The Future: Validation Study with Mayo Clinic

- IRB for protocol pending approval
- 120 rectal smears in normal subjects
- 45 rectal smears in patients with biopsy-proven colorectal cancer
- Smear samples to be shipped to an independent lab for analysis

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## Acknowledgment & Disclosure

### Basic Science Team

Nancy M. Lee, Ph.D.  
Shan Lu, M.D.  
Ling-chun Chen, Ph.D.  
Chun-Yi Hao, M.D.  
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Martin Brotman, M. D.  
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Fredric Mendes, M. D.

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