RUDOLF VIRCHOW (FATHER OF PATHOLOGY)

- First to link inflammation to cancer

- “lymphoreticular infiltration” of cancer reflects the origin of cancer at sites of inflammation (1863)
INFLAMMATION: HALLMARK OF CANCER

INFLAMMATION AND THE CANCER CONTINUUM

## INFLAMMATORY CONDITIONS AND TUMORGENESIS

<table>
<thead>
<tr>
<th>Pathogenic Condition</th>
<th>Associated Neoplasm</th>
<th>Aetologic Agent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Silicosis</td>
<td>Lung, mesothelioma</td>
<td>asbestos</td>
</tr>
<tr>
<td>Bronchitis</td>
<td>Lung</td>
<td>tobacco</td>
</tr>
<tr>
<td>Cystitis</td>
<td>Bladder</td>
<td>catheters</td>
</tr>
<tr>
<td>Gingivitis</td>
<td>Oral squamous cell</td>
<td>Poor dental hygiene</td>
</tr>
<tr>
<td>IBD, Crohn’s, UC</td>
<td>Colorectal</td>
<td>unknown</td>
</tr>
<tr>
<td>Chronic pancreatitis</td>
<td>Pancreatic</td>
<td>alcoholism</td>
</tr>
<tr>
<td>Reflux esophagitis</td>
<td>Esophageal</td>
<td>Gastric acids</td>
</tr>
<tr>
<td>Skin inflammation</td>
<td>Melanoma</td>
<td>UV light</td>
</tr>
</tbody>
</table>

INTER-RELATED MECHANISTIC TARGETS FOR DIETARY COMPONENTS AND PHARMACEUTICALS

Obesity/MetS

↑ P3K/Akt mTOR
↑ Growth and survival signaling

↑ VEGF
↑ Angiogenesis

↑ Cancer Risk

↑ insulin/IGF-1
↑ cytokines
↑ Pai-1/VEGF

↑ NK-κB
↑ COX-2

↑ Inflammation

↑ Insulin/IGF-1
↑ cytokines
↑ Pai-1/VEGF

↑ Inflammation

↑ Growth and survival signaling

↑ Cancer Risk

Ford NA et al. Frontiers in Oncology, 2013
Michael Simon, MD, Professor and WHI PI, Karmanos Cancer Center
- Do statins reduce cancer risk and progression?

Theodore Brasky, PhD, Assistant Professor, The Ohio State University
- NSAIDS and aspirin: Are these effective, over-the-counter, anti-inflammatory, anti-cancer agents?

Fred Tabung, PhD, Post-doctoral Fellow, Harvard University
- Can diet modulate inflammation to reduce cancer risk and improve cancer survival?

INFLAMMATION & CANCER: EVIDENCE FROM WHI