Citation Key
for more information see: http://open.umich.edu/wiki/CitationPolicy

Use + Share + Adapt

{ Content the copyright holder, author, or law permits you to use, share and adapt. }

- **Public Domain – Government**: Works that are produced by the U.S. Government. (USC 17 §105)
- **Public Domain – Expired**: Works that are no longer protected due to an expired copyright term.
- **Public Domain – Self Dedicated**: Works that a copyright holder has dedicated to the public domain.
- **Creative Commons – Zero Waiver**
- **Creative Commons – Attribution License**
- **Creative Commons – Attribution Share Alike License**
- **Creative Commons – Attribution Noncommercial License**
- **Creative Commons – Attribution Noncommercial Share Alike License**
- **GNU – Free Documentation License**

Make Your Own Assessment

{ Content Open.Michigan believes can be used, shared, and adapted because it is ineligible for copyright. }

- **Public Domain – Ineligible**: Works that are ineligible for copyright protection in the U.S. (USC 17 § 102(b)) *laws in your jurisdiction may differ

{ Content Open.Michigan has used under a Fair Use determination. }

- **Fair Use**: Use of works that is determined to be Fair consistent with the U.S. Copyright Act. (USC 17 § 107) *laws in your jurisdiction may differ

  Our determination **DOES NOT** mean that all uses of this 3rd-party content are Fair Uses and we **DO NOT** guarantee that your use of the content is Fair.

  To use this content you should **do your own independent analysis** to determine whether or not your use will be Fair.
The Inflammatory response

1. vascular response-fluid exudate
2. cellular response-leukocytic exudate
3. macrophages
4. exudates-non-cellular, cellular, mixed
5. granulomas-granulomatous inflammation

6. fate of the inflammatory reaction
7. healing and scar formation
8. healing of cutaneous wounds
9. chronic inflammation
Possible Outcomes of Acute Inflammation

• Resolution

• Healing with Scar

• Chronic Inflammation
HEALING

• SCAR FORMATION

• REGENERATION
GRANULATION TISSUE

• Loose, young connective tissue with proliferating fibroblasts and endothelial cells. Granulation tissue “matures” to form scar.

• The process of granulation tissue ingrowth is termed “organization”.
FIBRINOUS EXUDATE
FIBRINOUS EXUDATE
EARLY ORGANIZATION

G.D. Abrams, University of Michigan Medical School
FIBROBLAST PROLIFERATION

G.D. Abrams, University of Michigan Medical School
GRANULATION TISSUE
Second Week

G.D. Abrams, University of Michigan Medical School
NECROTIC MYOCARDIUM
Day 1-2
NECROTIC MYOCARDIUM
Day 5-6
NECROTIC MYOCARDIUM
Second Week

G.D. Abrams, University of Michigan Medical School
HEALING OF CUTANEOUS
WOUNDS

- Healing by primary or first intention-wound edges in apposition at the start of healing.

- Healing by secondary or second intention-wound edges apart, wound open.
PHASES OF WOUND HEALING

• Inflammation

• Organization and Regeneration

• Deposition of ECM

• Remodeling
HEALING BY PRIMARY INTENTION
HEALING BY SECONDARY INTENTION
18/Fig. 22.—Contraction of a wound in the skin of a guinea-pig. The guinea-pig’s head is to the left. A rectangle of skin and panniculus carnosus was excised touching the inner borders of a series of tattoo marks in the dermis (a). After 15 days the wound had closed with the tattoo marks at or close to the line of healing (b). (From Grillo, Watts and Gross.)
Complications of Wound Healing

• Deficient scar – dehiscence, hernia
• Excessive scar – hypertrophic scar, keloid
• Excessive granulation tissue – “proud flesh”, adhesions
• Contracture
• Traumatic neuroma
CHRONIC INFLAMMATION

Inflammation sufficiently prolonged that evidence of repair is seen at the same time as evidence of tissue injury and continuing, active inflammation.
CAUSES OF CHRONIC INFLAMMATION

• Prolonged or repetitive action of toxic agents

• Persistent infection

• Autoimmunity
ACUTE PHASE RESPONSE

- Leukocytosis
- Fever
- Synthesis of acute phase proteins
- Miscellaneous systemic effects
What we want you to know and understand

- The 5 cardinal signs of inflammation – their mechanisms
- Mechanisms of the vascular response and the cellular response and how they relate to one another
- The cells participating in inflammatory and reparative responses, and their roles
- Exudates – various types, why they form, and their fate. Granulomatous inflammation
- Organization and scarring
- Wound healing – mechanisms, factors affecting healing, complications
Additional Source Information
for more information see: http://open.umich.edu/wiki/CitationPolicy

Slide 6: G.D. Abrams, University of Michigan Medical School
Slide 7: G.D. Abrams, University of Michigan Medical School
Slide 10: G.D. Abrams, University of Michigan Medical School
Slide 11: G.D. Abrams, University of Michigan Medical School
Slide 12: G.D. Abrams, University of Michigan Medical School
Slide 13: G.D. Abrams, University of Michigan Medical School
Slide 14: G.D. Abrams, University of Michigan Medical School
Slide 15: G.D. Abrams, University of Michigan Medical School
Slide 16: G.D. Abrams, University of Michigan Medical School
Slide 17: G.D. Abrams, University of Michigan Medical School
Slide 18: G.D. Abrams, University of Michigan Medical School
Slide 19: G.D. Abrams, University of Michigan Medical School
Slide 20: G.D. Abrams, University of Michigan Medical School
Slide 21: G.D. Abrams, University of Michigan Medical School
Slide 22: G.D. Abrams, University of Michigan Medical School
Slide 25: Department of Pathology, University of Michigan
Slide 26: Department of Pathology, University of Michigan
Slide 27: Grillo, Watts and Gross
Slide 30: Department of Pathology, University of Michigan
Slide 33: G.D. Abrams, University of Michigan Medical School