

Exercise walk-through

10.2

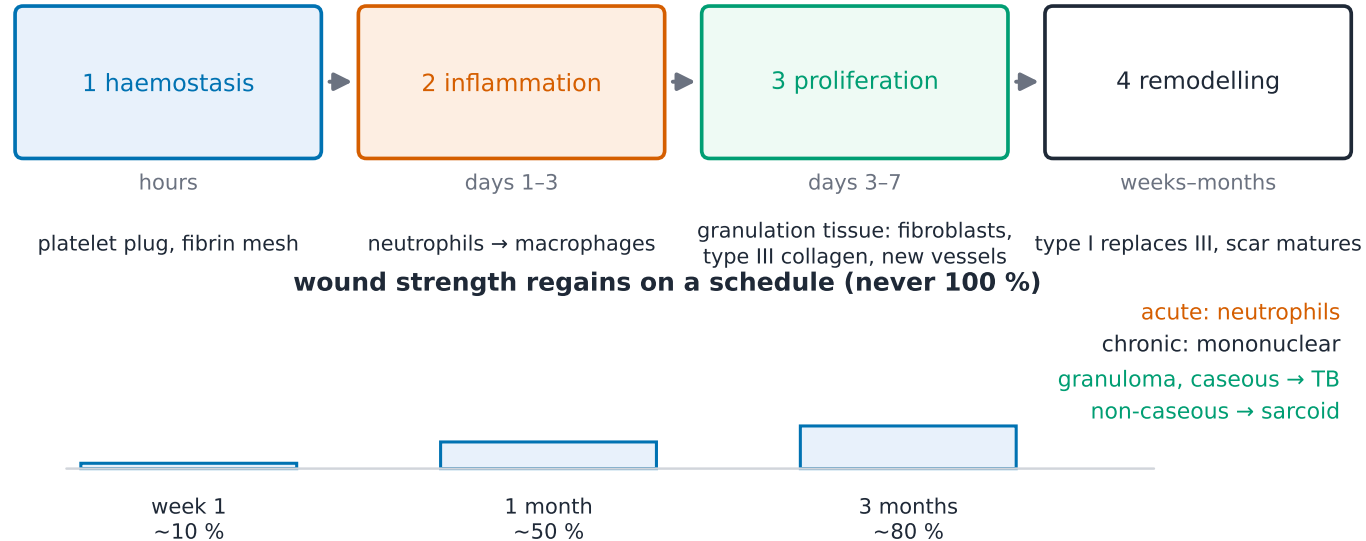
Inflammation and repair

University Medicine

Inflammation and repair: two clocks

- 1 Cells** Acute: neutrophils, exudate, cardinal signs. Chronic: mononuclear + scarring; granulomas caseous (TB) vs non-caseous (sarcoid).
- 2 Programme** Haemostasis (hours) → inflammation (days 1-3) → **granulation tissue** (days 3-7) → remodelling months.
- 3 Strength** ~10 % at 1 week · ~50 % at 1 month · ~80 % at 3 months — never 100 %.

The wound-healing timeline



Haemostasis, inflammation, proliferation, remodelling: each phase has its clock.

Exercises 2.1-2.3

2.1 Which cell type defines acute inflammation? [3]

2.2 Wound strength at one month? [3]

2.3 Granulation tissue vs granuloma – one distinguishing line. [3]

Exercises 2.1-2.3

2.1 Which cell type defines acute inflammation? [3]

2.1

- The neutrophil; chronic inflammation is defined by its absence ✓.
-

2.2 Wound strength at one month? [3]

2.2

- ~50 % ✓.
-

2.3 Granulation tissue vs granuloma – one distinguishing line. [3]

2.3

- Granulation tissue = repair (vessels + collagen); granuloma = aggregated macrophages walling off a persistent stimulus ✓.

Exercise 3.1

3.1 A fictional biopsy at day 5 of an open wound.

Identify the expected population (neutrophils receding, macrophages dominant, early fibroblasts and new vessels – granulation tissue appearing on schedule at days 3–7) ✓.
Explain why the wound is still weak (~10–20 % strength; type III collagen only) and when it reaches ~50 % and ~80 % ✓.

[8]

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3.1

- Day 5: macrophages dominant, neutrophils receding ✓.
- Fibroblasts and new vessels – granulation tissue, on schedule (days 3–7) ✓.
- Weak because type III collagen only; ~10–20 % at this stage ✓.
- ~50 % at 1 month; ~80 % at 3 months as type I replaces III ✓.

Exercise 3.2

3.2 A fictional lung biopsy shows nodules of aggregated macrophages.

State what the aggregation is called (granuloma). Give the fork: central caseous necrosis → think mycobacteria (TB); no necrosis, no organism → sarcoid pattern ✓. Explain why the presence of necrosis changes the investigation. [7]

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3.2

- A granuloma – aggregated macrophages (with lymphocytes) ✓.
- Caseous centre → mycobacteria (TB) pattern; non-caseous → sarcoid pattern ✓.
- Necrosis implies organisms digesting tissue – stain and culture for TB before treating as sterile sarcoid ✓.