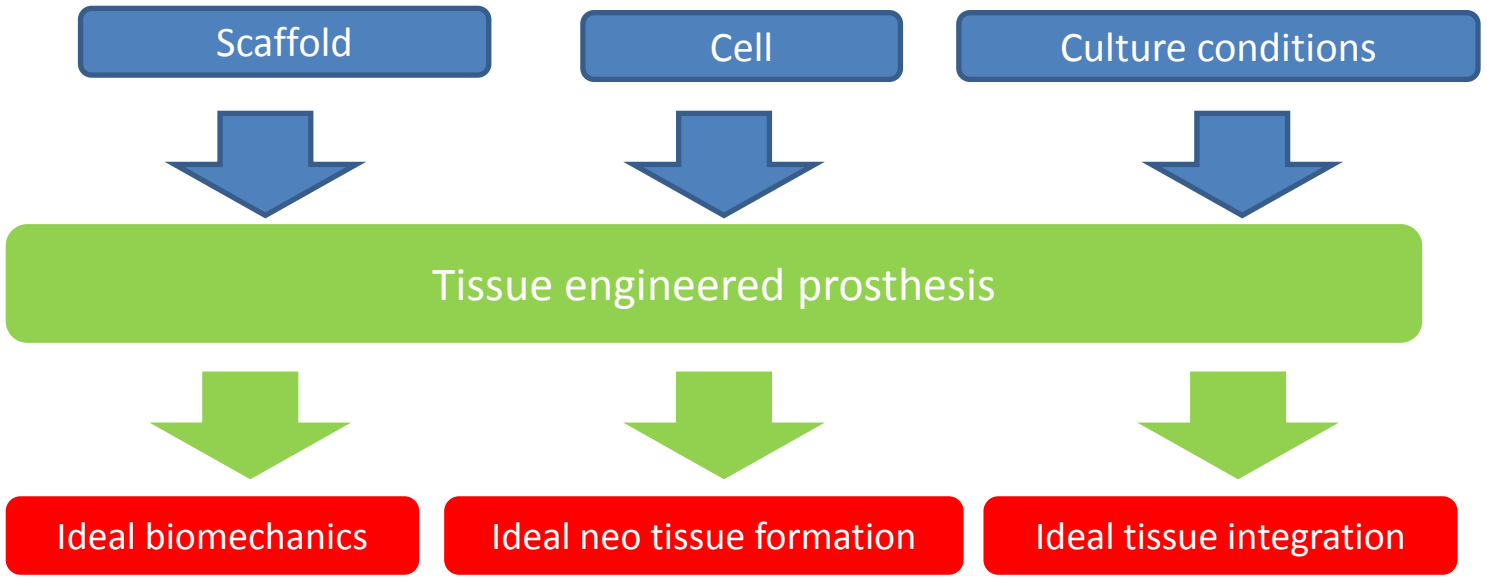

Fig 1.6.7.1. The constituents of the ideal tissue engineered prosthesis (blue) and its outputs (red).

Fig 2.11.1. Variable stress rig (1) utilising inverted Scaffdex™ rings in a six well culture plate with four ball bearings used to vary stress on alternate days.

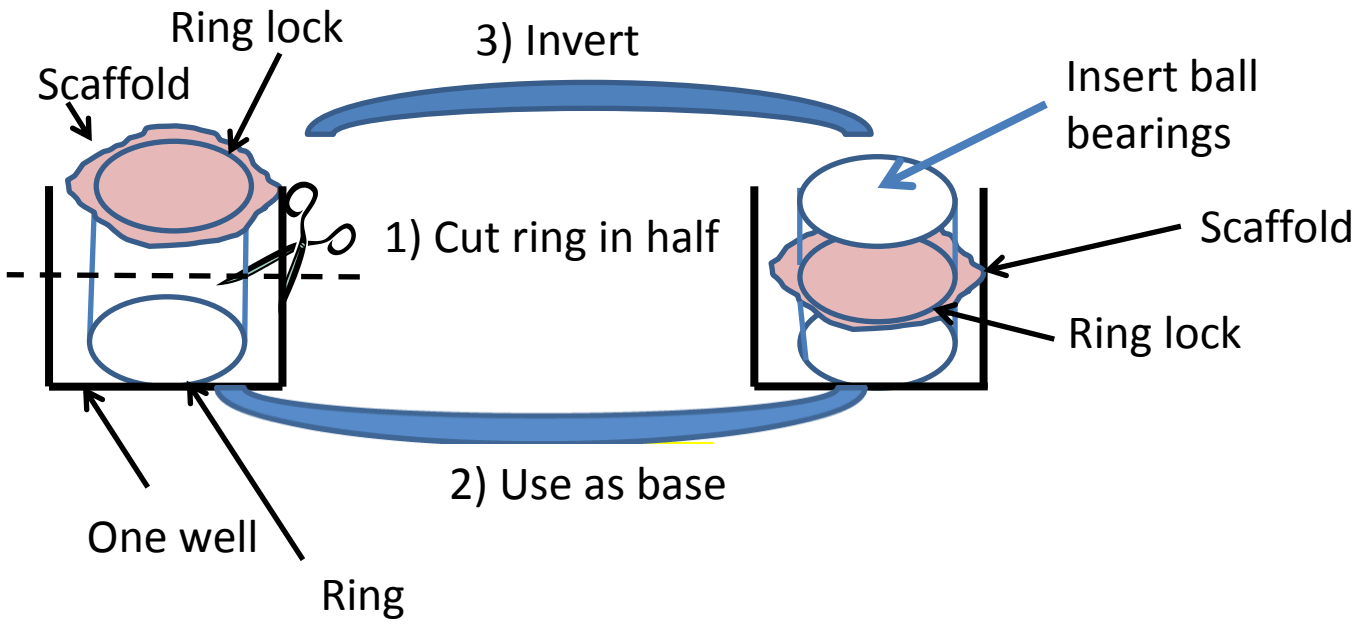

Fig 2.11.2. Variable stress rig (2) utilising cut Scaffdex™ rings with four ball bearings used to vary stress on alternate days.

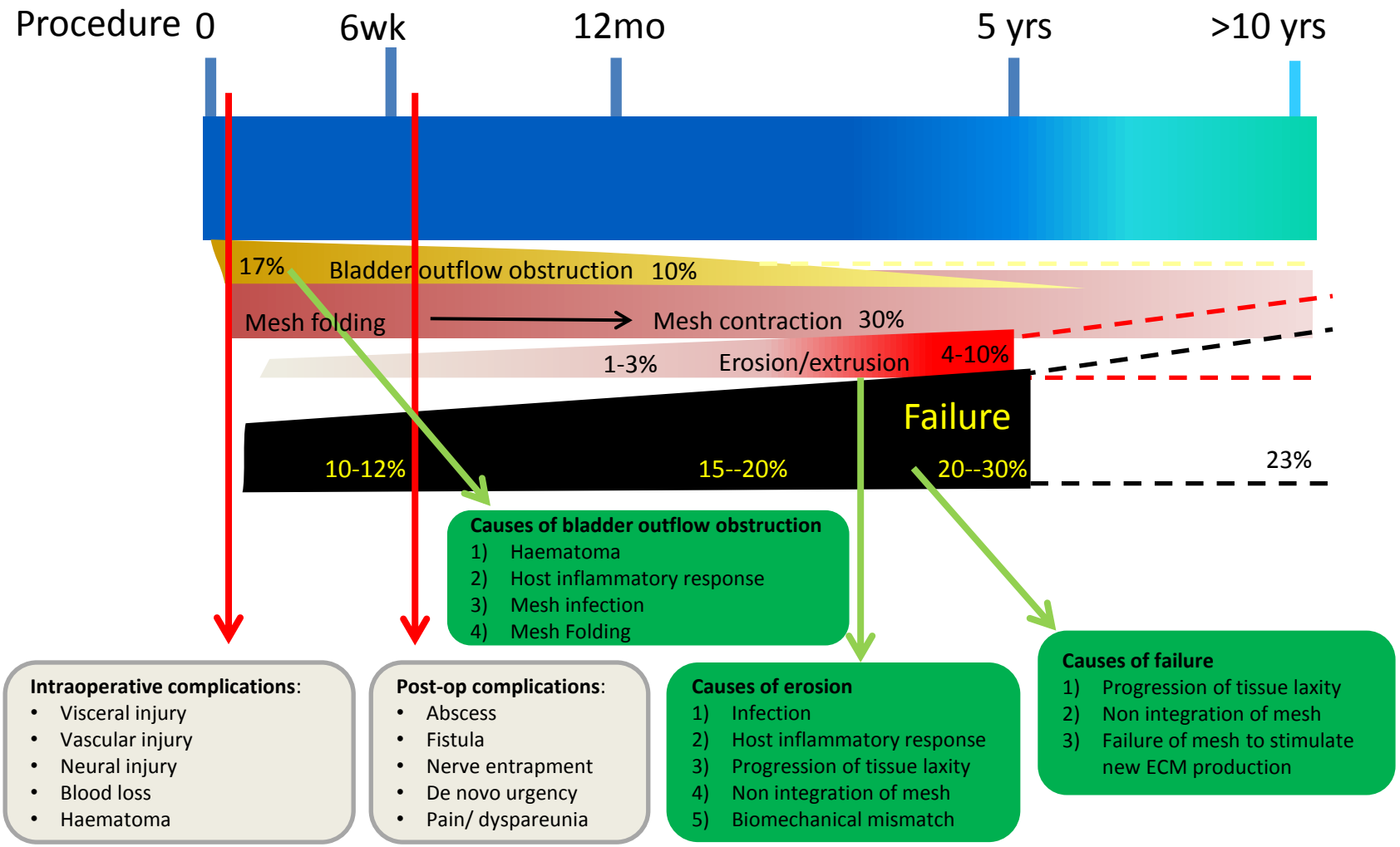

Fig 10.1.1. Timeline of the failure and complications for synthetic mesh procedures for SUI.

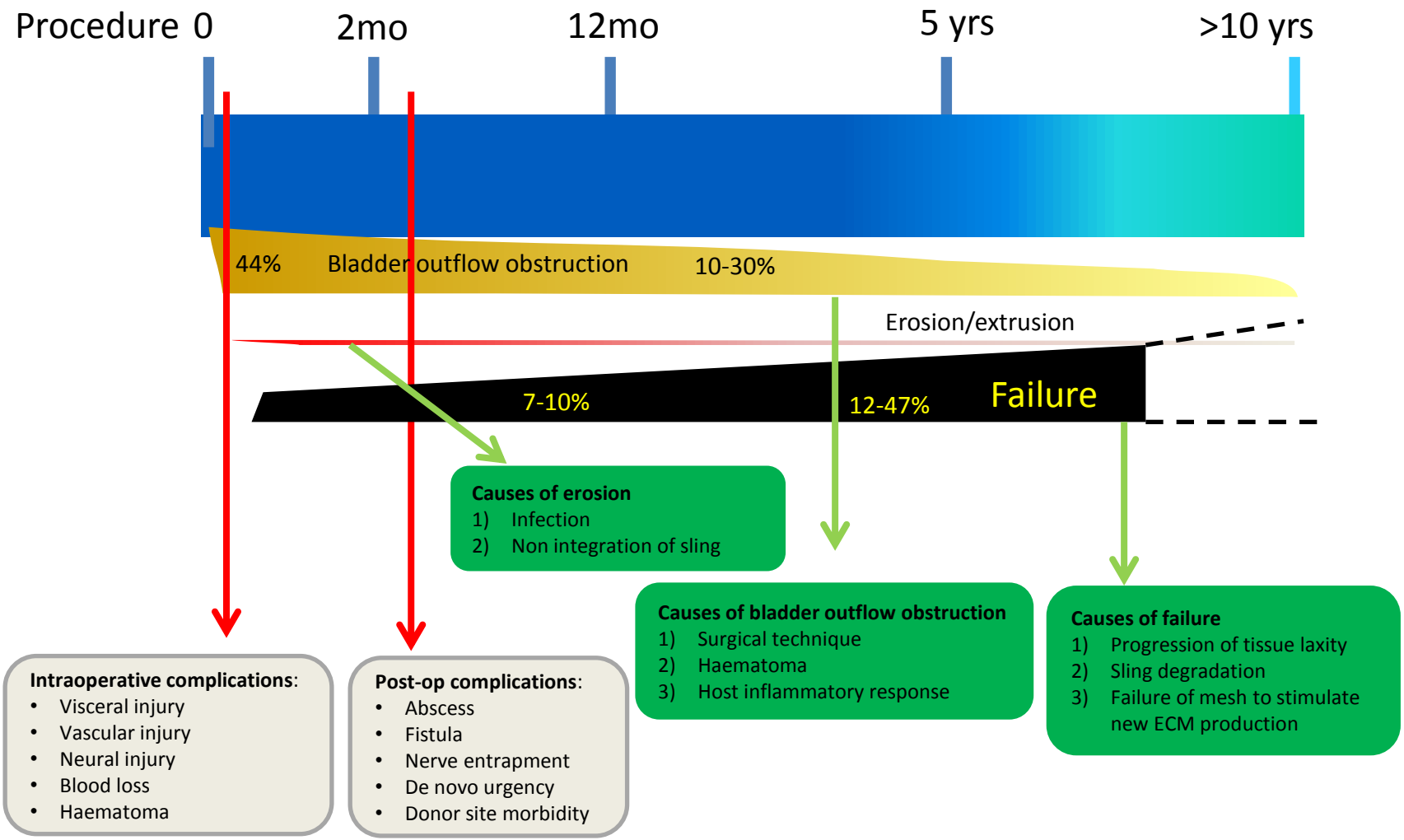

Fig 10.1.2. Timeline of the failure and complications for autologous pubovaginal slings.

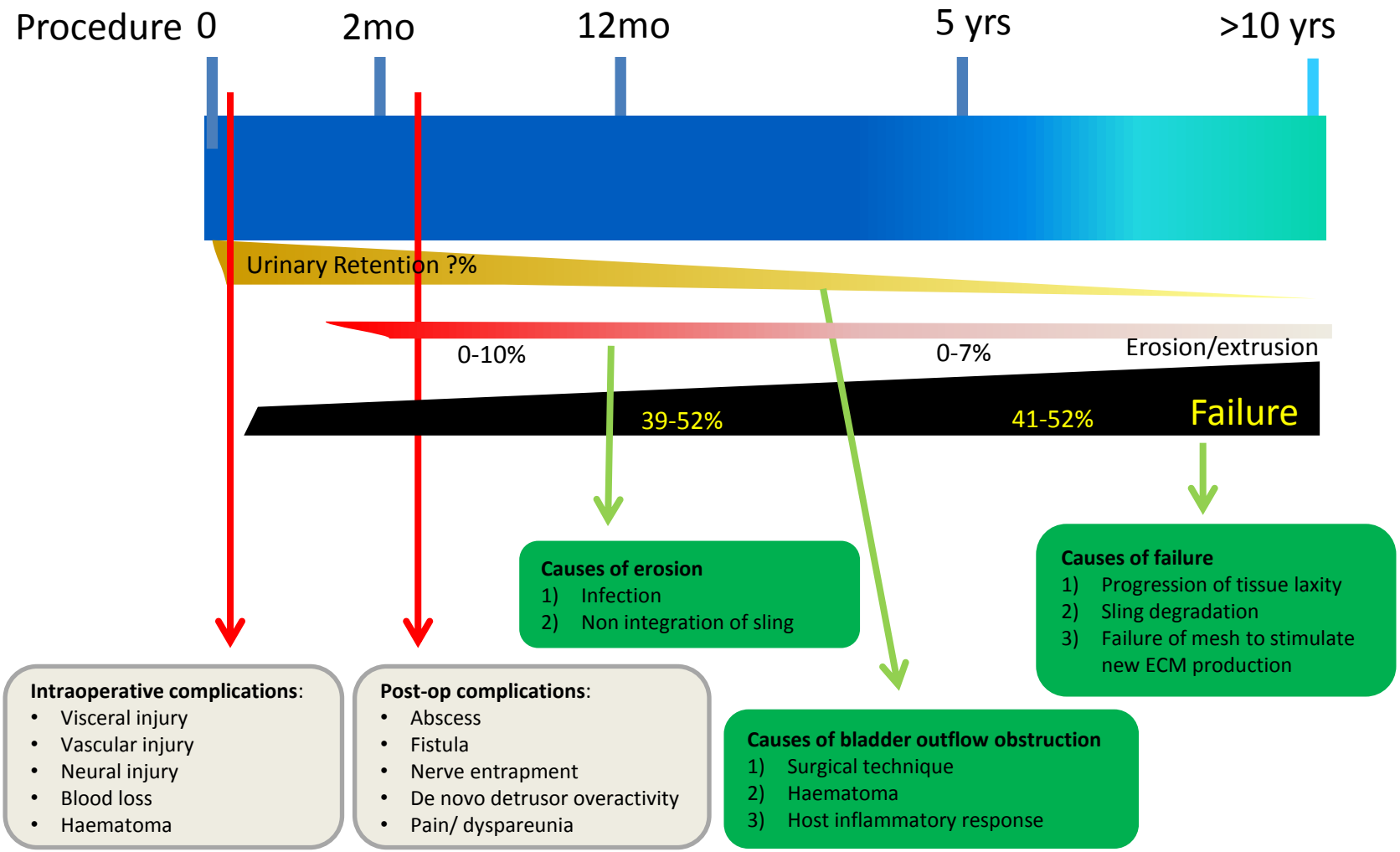

Fig 10.1.3. Timeline of the failure and complications for biological grafts for SUI.

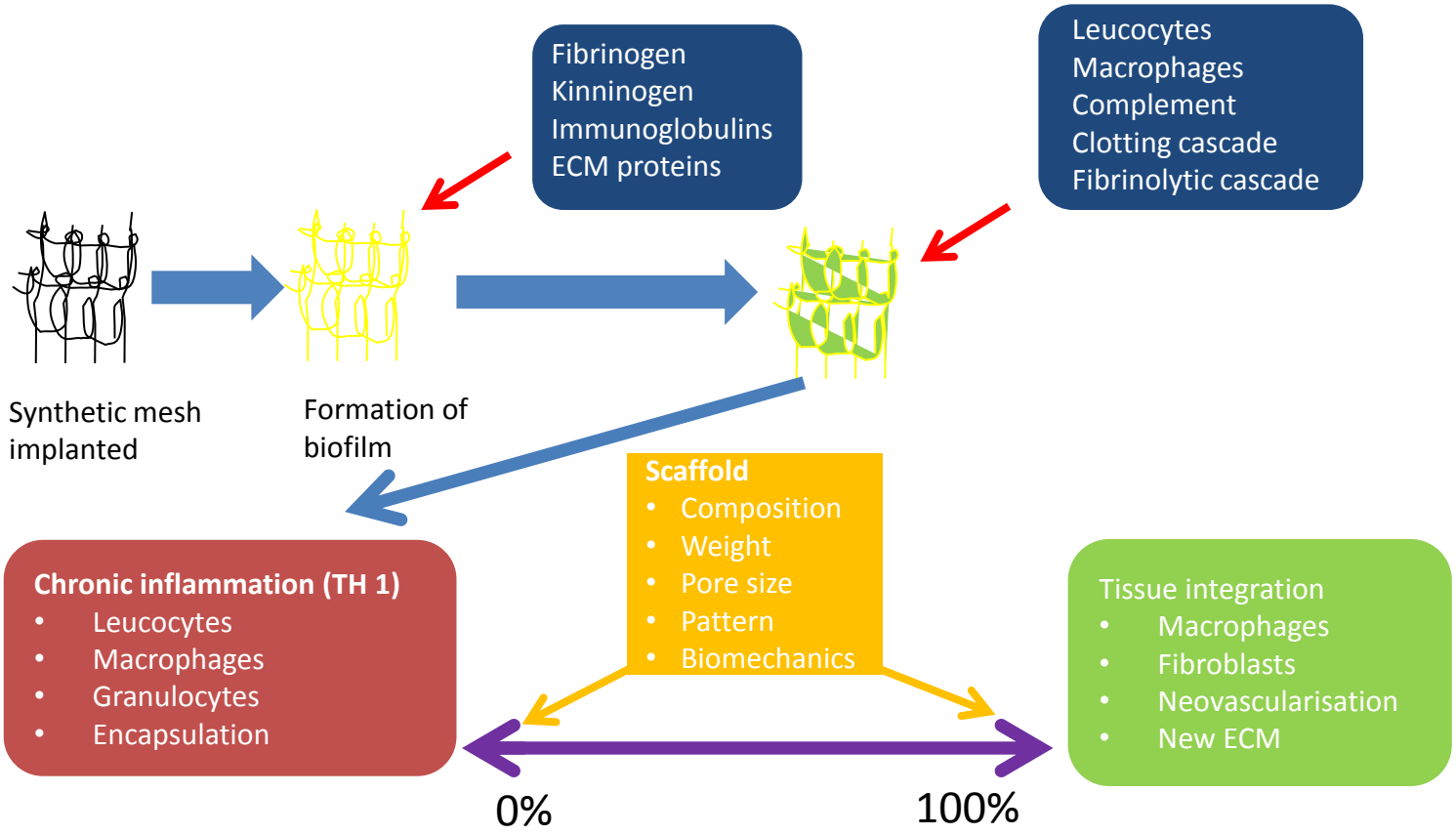

Fig 10.1.4. Schematic of the host inflammatory response to synthetic implants. The degree of beneficial tissue integration (green box) depends on a number of factors (orange box). Most meshes will lie at a point on the purple arrow.

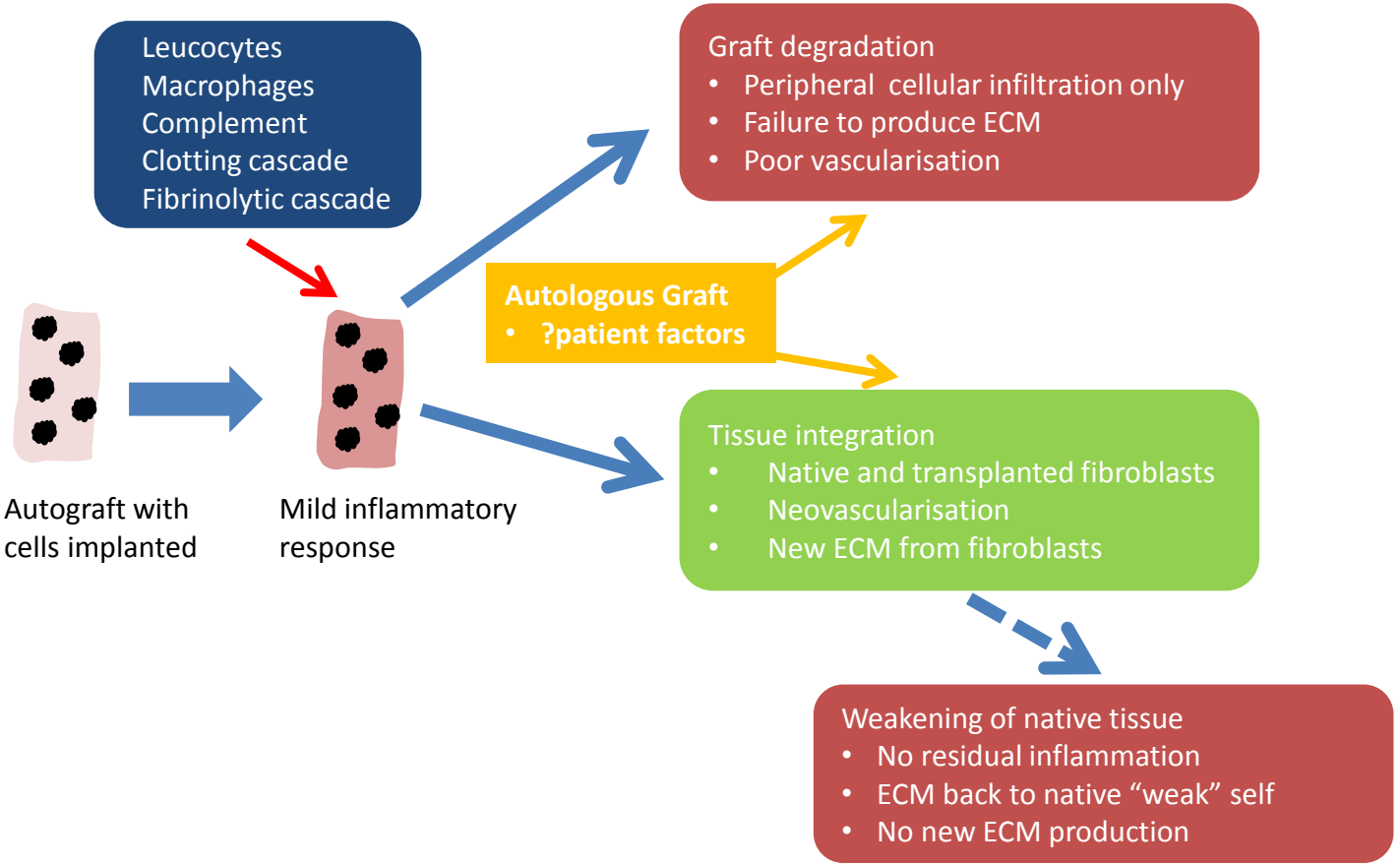

Fig 10.1.5. Schematic of the host inflammatory response to autologous transplants. It is not known what triggers an autologous graft to be degraded and fail (red box) or integrate (green box). Weakening of native tissue leads to long term failure.

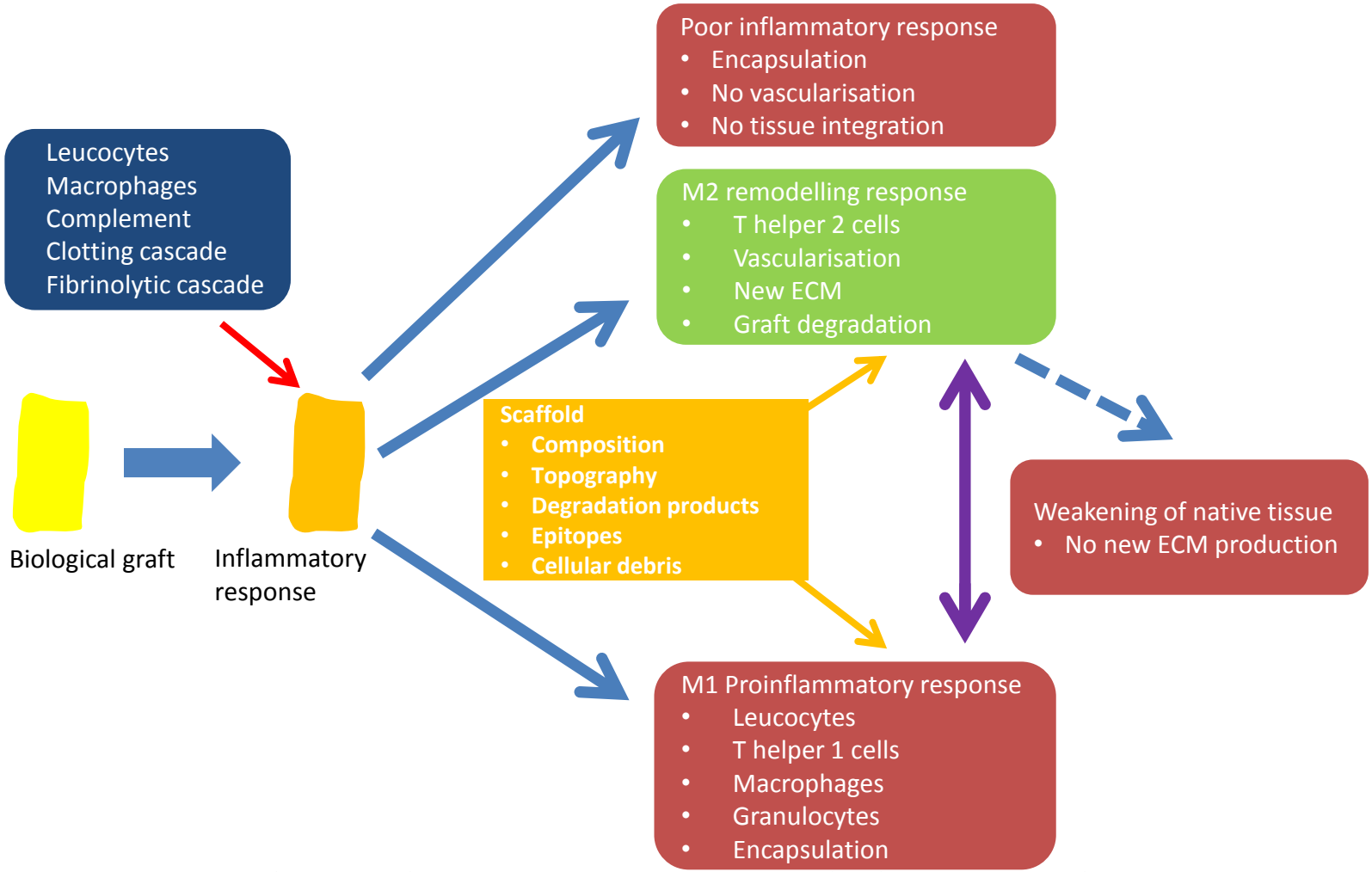

Fig 10.1.6. Schematic of the host inflammatory response to biological grafts. If there is a poor inflammatory response to the graft then encapsulation occurs. The factors that are postulated to lead to a beneficial M2 response or to the undesirable M1 response are shown in the orange box. Both the M1 and M2 may occur with grafts at various time points.

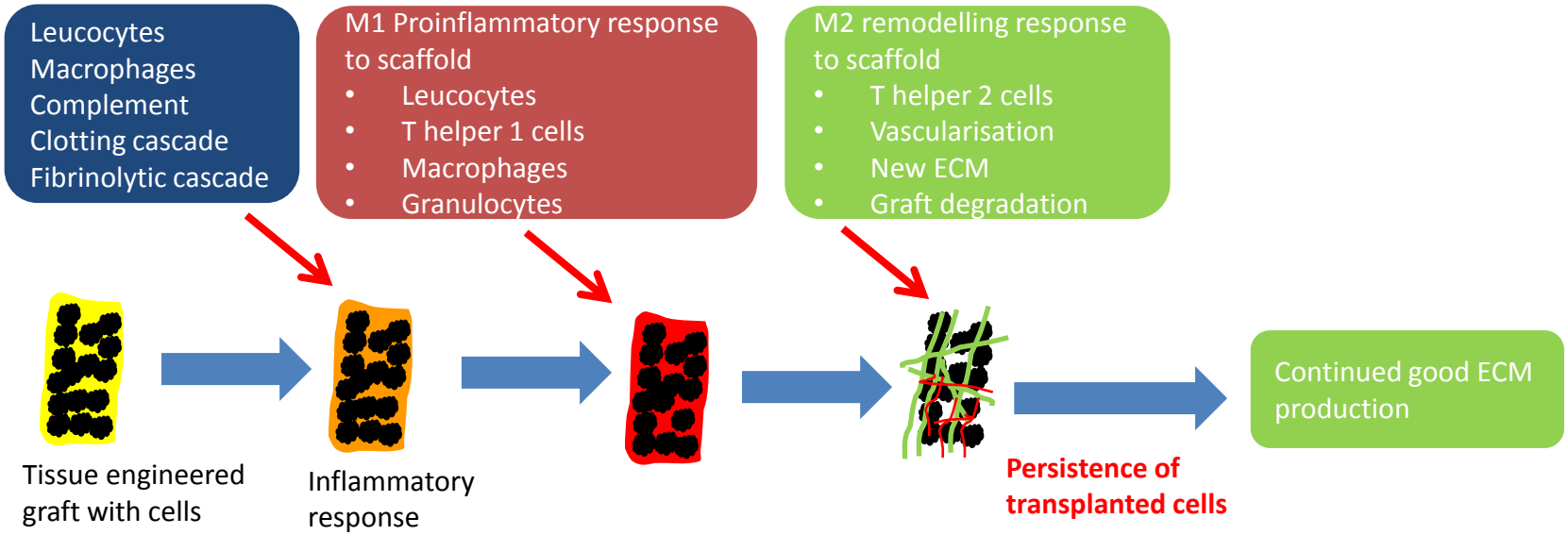

Fig 10.2.1. Schematic of the target host inflammatory response to tissue engineered scaffolds. The key processes are the correct macrophage response to the scaffold with cells and persistence of the transplanted cells to continue ECM production.

Material	AL		CD		PPL		PD		SF		SIS		Th PLA		Th PLA	PLA
Restraint?	N	Y	N	Y	N	Y	N	Y	N	Y	N	Y	N	Y	Variable stress 2	0.3mM Vit C
Cell activity	++	++	++	++	+	+++	++	++	++	++	+++	+++	+++	+++	++	+++
UTS	+++	+++	++	+	++	++	+++	+++	++	+	++	+++	+++	+++	+++	+++
UT strain	++	++	++	+++	+++	+++	+++	+++	+++	+++	++	++	+++	++	+++	++
YM	+	+	++	++	++	++	+	+	+++	+++	++	++	+++	++	+++	+
%Contraction	3.4	2.4	17.6	2.4	1.2	0.4	7.1	1.7	1.3	0.38	15.4	-0.9	14.1	3.14	2.3	30
Total Collagen	++	++	++	++	++	++	++	+++	+++	+++	+++	+++	+++	+++	+++	+++
Collagen I	+++	+++	+++	+++	+	++	++	++	++	++	+++	+++	+++	+++	+++	NA
Collagen III	+++	+++	+++	++	++	++	++	++	++	+++	+++	+++	+++	+++	+++	NA
Elastin	++	++	++	++	+	+	+	+	++	++	+++	+++	+++	+++	+++	NA

Table 10.3.1. Summary of the relative properties of scaffolds with and without restraint and with variable stress or Vitamin C. +++ is given to best scaffold, ++ to next scaffold which is significantly less than that the first scaffold ($p<0.05$) then + for next change in significance and finally +/-. Contraction could not be graded and is shown as %.

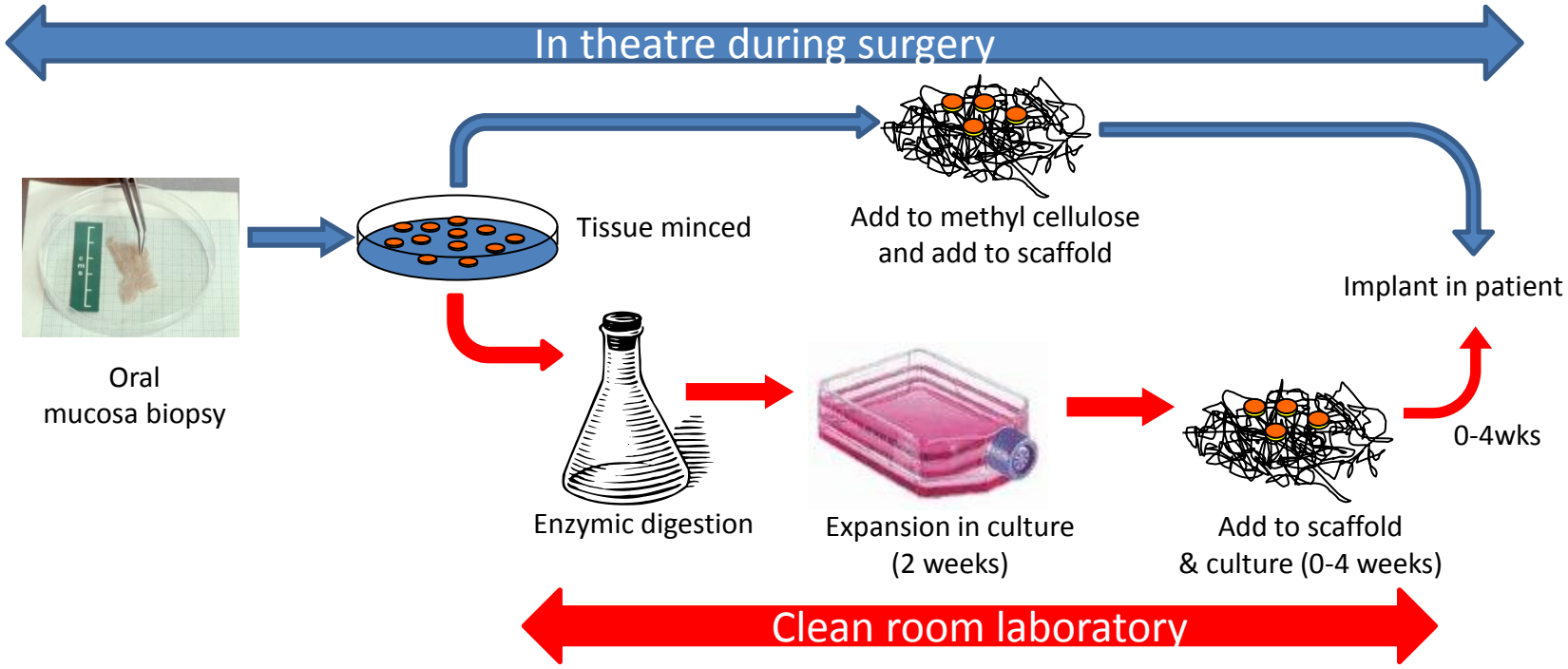

Fig 10.3.1. Schematic of the current method of manufacture of a tissue engineered prosthesis (red) and a proposed one-stage procedure to be completed completely in theatre.

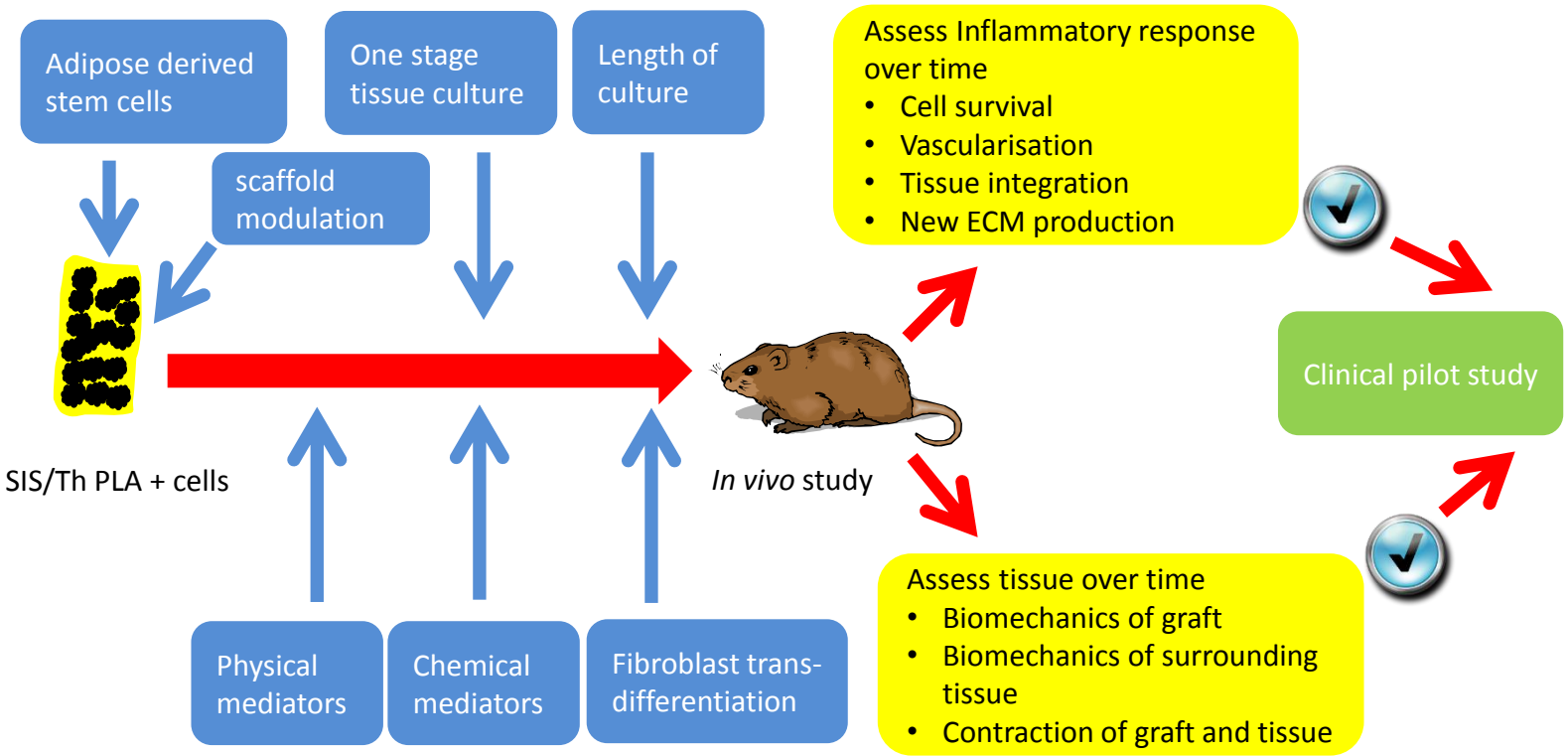

Fig 10.4.1. Schematic of future work with the tissue engineered prostheses to progress to a pilot study. Yellow boxes show *in vivo* assessments. Red arrows show work that is critical before a clinical pilot study. Blue arrows and boxes are methods which may be used to improve the prostheses and are not essential.