The effect of wounding on protein expression in rainbow trout muscle.

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The effect of wounding on protein expression in rainbow trout muscle

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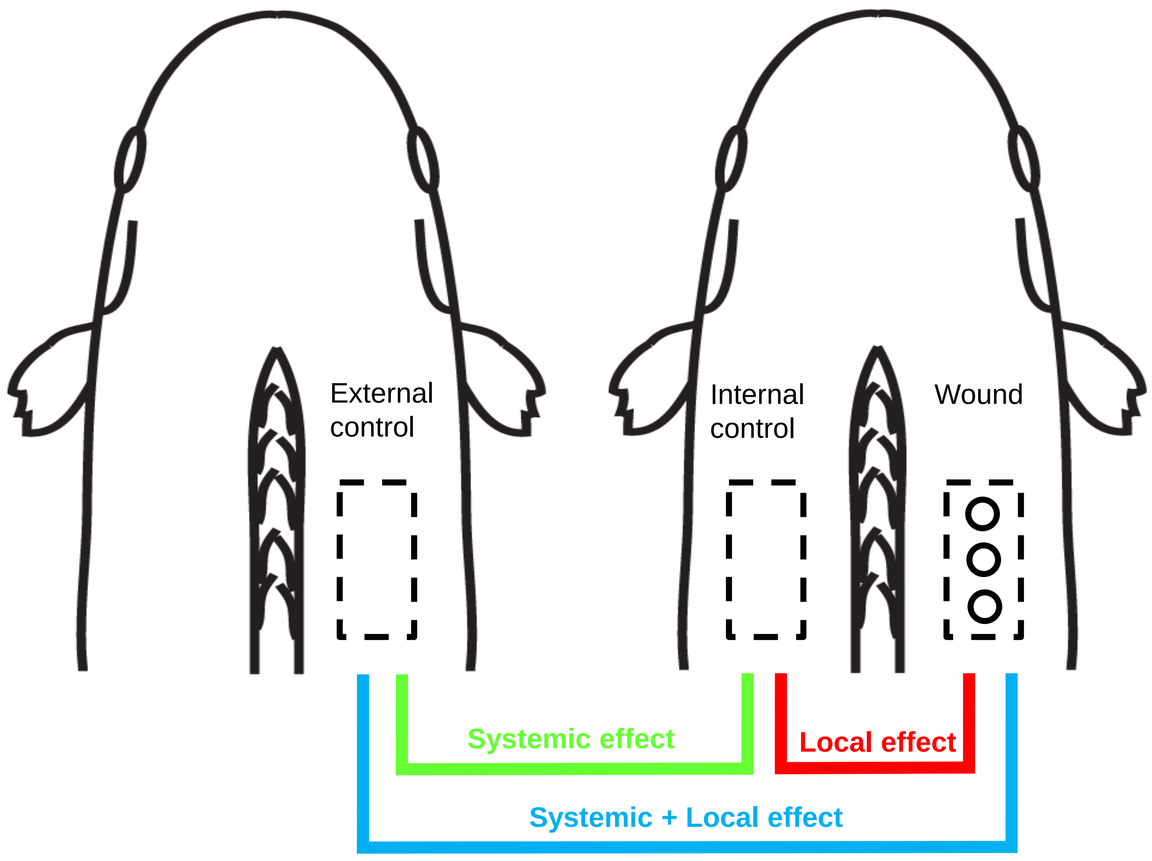
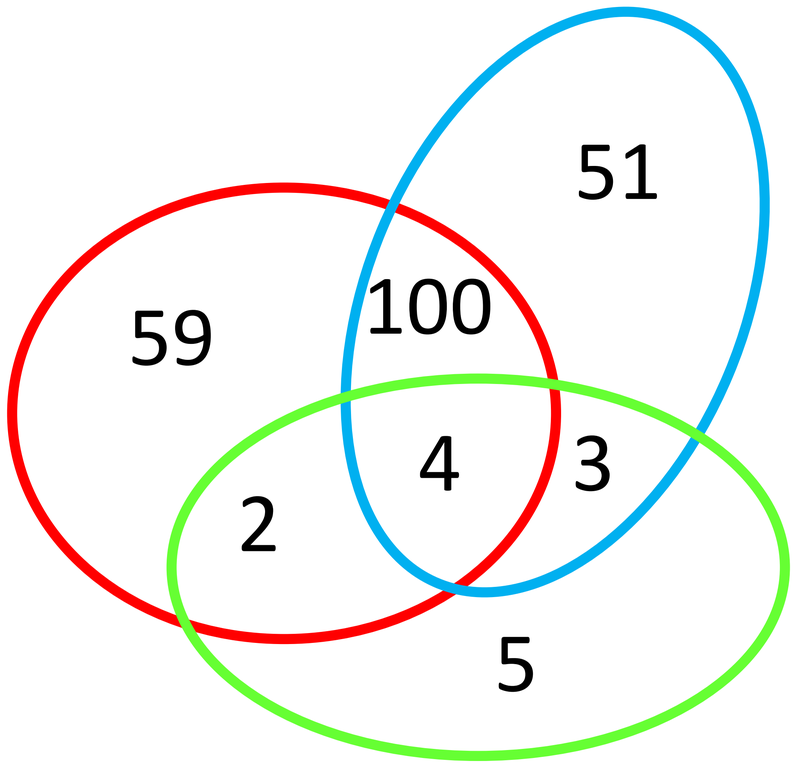
Experimental model system to reduce interindividual variability



Design: 14 rainbow trouts (640 g, 34 cm) were used for the experiment. Seven fish were injured and seven fish were uninjured followed by sampling at day 7. Samples were taken from the muscle tissue above the lateral line anterior to the dorsal fin. The colours indicate the different comparisons made within the experimental setup: Internal control v. wounding, External control v. wounding and Internal control v. external control

Result overview



Number of proteins changing between the three comparisons presented in the experimental design. Differences are established based on a paired T-test (Internal control v. wounding) and a unaired T-test (External control v. wounding and internal control v. external control)

Table 1
Wounding v. internal control

Spot No.	Protein name
1	Myosin binding protein C, fast type
2	Myosin binding protein H-like
3	Myosin light chain 1
4	Annexin A1a
5	Annexin A5
6	Annexin A6
7	Transferrin
8	Ferritin
9	DJ-1
10	Complement component C9
11	Cysteine proteinase
12	6-phosphogluconate dehydrogenase
13	Phosphoglucomutase 1
14	Methylmalonate-semialdehyde dehydrogenase
15	Glutamate carboxypeptidase-like protein 1
16	Disulfide-isomerase A3 precursor
17	Glyceraldehyde-3-phosphate dehydrogenase
18	Isocitrate dehydrogenase 3 (NAD+) alpha
19	α-enolase
20	Glutathione S-transferase M
21	Apolipoprotein A-I-1 precursor
22	α-1-antiproteinase-like protein
23	β-actin
24	Serum albumin

Table 2
Wounding v. external control

Spot No.	Protein name
3	Myosin light chain 1
7	Transferrin
9	DJ-1
10	Complement component C9
13	Phosphoglucomutase 1
14	Methylmalonate-semialdehyde dehydrogenase
15	Glutamate carboxypeptidase-like protein 1
17	Glyceraldehyde-3-phosphate dehydrogenase
19	α-enolase
25	Enolase 3-2
26	Hemopexin-like protein variant 1
27	60 kDa heat shock protein
28	Aldehyde dehydrogenase
29	Malate dehydrogenase 1
30	Non-metastatic cell 1 protein

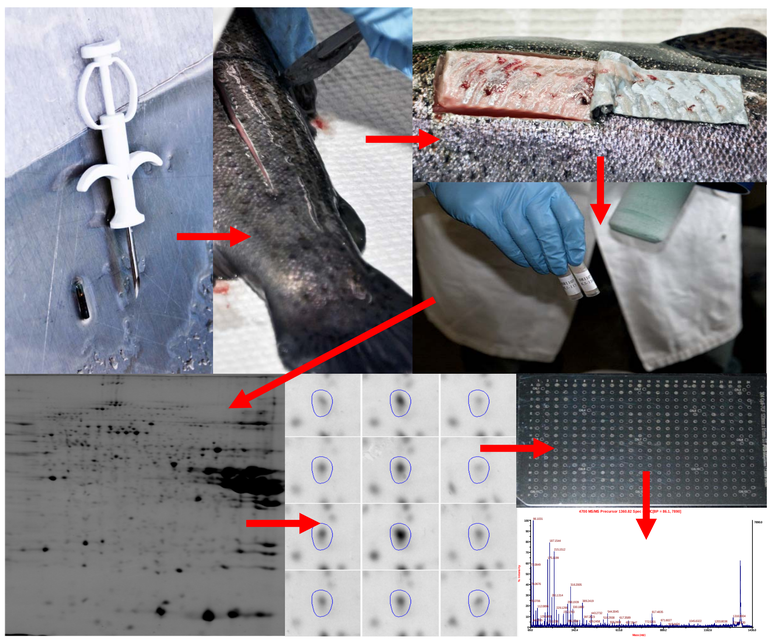
Table 3
Internal control v. external control

Spot No.	Protein name
7	Transferrin
17	Glyceraldehyde-3-phosphate dehydrogenase
19	α-enolase
31	α-1-antiproteinase-like protein

Table 1-3. MS/MS based protein identification on spots from results. Methods: Additional gels with increased amounts of proteins were run for identification using Maldi TOF/TOF. The MS/MS data were subjected to peptide mass search using MASCOT to search against all entries in NCBInr.

Ethics: All work involving experimental animals were conducted by authorized personnel and according to the Danish legislation for experimental animals (Lov nr. 382, af 10. juni 1987).

Methods



Conclusion

- **Only 4 proteins are regulated in response to all three comparisons, showing the importance of using both internal and external control**
- **Local protein adaptation to wounding includes:**
  - **Muscle structure**
  - **Iron metabolism**
  - **Energy metabolism**
- **The systemic effect includes regulating of energy metabolism**