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| BA |
| C | D | E |

**Supporting Information**

**Investigation of the molecular mechanisms which contribute to the survival of the polychaete *Platynereis* spp. under ocean acidification conditions in the CO2 vent system of Ischia Island**

Fig S1 Images obtained from the Western blot analysis and elaborated with ImageJ software of the individuals of *Platynereis* spp. sampled in the Ctrl and in the Vent site (A. H2B, B. H2BK16AC, C. H3, D. H3K27AC, E. H3K4Me2).

Table S1 PERMANOVA results of epigenetics analysis carried out in individuals of *Platynereis* spp. sampled in the Ctrl and in the Vent site.

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| Histone modification | Factor |
| H2B AC/H2B | site | p(MC)= 0.4999 |
| F(1,11)= 1.0263 |
| period | p(MC)= 0.1117 |
| F(1,11)= 3.1896 |
| site x period | **p(MC)= 0.0214 \*** |
| F(1,11)= 8.3567 |
| H3 AC/H3 | site | p(MC)= 0.4266 |
| F(1,11)= 15.551 |
| period | p(MC)= 0.0648 |
| F(1,11)= 44.451 |
| site x period | p(MC)= 0.3079 |
| F(1,11)= 1.179 |
| H3 Me2/H3 | site | p(MC)= 0.8589 |
| F(1,11)= 48.27 |
| period | p(MC)= 0.665 |
| F(1,11)= 0.1957 |
| site x period | p(MC)= 0.3181 |
| F(1,11)= 11.371 |