Engenetics
The science of species

Experimental protocols and results

We calculated, from the experiment, that each *Brassica rapa* plant spends 0.01988 grams of biomass; and 1.2249 joules of energy on Darwinian competition—meaning that it has become as it is through a process of Darwinian evolution and cannot be the product of 'intelligent design'.

Experimental protocols and results

The purpose of the experiment is to calculate the exact amount—in joules of energy and kilogrammes of biological material—that *Brassica rapa* spends on Darwinian competition and evolution.

We began by planting four (4) *Brassica rapa* seeds per pot. The pots were of standard size, having dimensions of 1.8 cm x 1.8 cm x 5.7 cm, giving a capacity of 18.5 cm3. The plants were grown under 24-hr light with a continuous water supply. Once true leaves developed, we randomly selected five pots for destructive harvesting and measurement. Dates of measurement were carefully noted. Not all seeds planted grew and the number of survivors was carefully noted at each stage. The non-destroyed pots were left to grow undisturbed to the next stage.

All plants within each pot were carefully measured for the following factors: leaf area, leaf mass, stem mass and root mass. Only one measure of root mass could be taken per each pot, because it was not possible to determine which root-sets belonged to which specific plant. Root mass was therefore averaged out over all surviving plants in any given pot.

We measured photosynthesis per unit leaf area. However, because of the time these measurements took, and due to their delicacy, then if there were more than three survivor plants in any pot, photosynthesis was only measured on a maximum of three plants for that pot.

We repeated the harvesting, destruction and measurement regimen at the flowering, fruiting, and mature fruit stages, again selecting five pots at random. Dates and surviving numbers

were carefully noted. In the later stages, we also measured the total biomass of any flowers and fruits present.

Since the plants were drying and senescing as a part of their natural cycle, we could not measure photosynthesis in the final stage, only biomass. After plants had senesced, fruits were harvested and seeds counted.

During each generation, the plants were hand-pollinated on at least two occasions, so that the plants could set seed. Dried bees were placed upon toothpicks and rubbed across the anthers to pick up pollen. The pollen was then applied to the stigmas to effect a transfer.

Biomass was used to infer plant energy content. Plant biomass is approximately 45% carbon. There are approximately 8.08 cal/g of carbon in plant tissue—equivalent to 1929.78 joules per gram (we used joules in all calculations).

We measured photosynthesis in units of carbon gained per unit leaf area per second. The measured average taken from the first three plants in each pot was then used as the photosynthetic rate for all plants in that pot. The average rate per unit leaf area was then converted to the photosynthetic rate for each plant in that pot.

The average number of seeds produced per pot after the fruiting of the first generation was 10. We therefore planted 10 seeds per pot to produce a second generation, and then repeated the entire process and suite of measurements.

The average number of seeds produced per pot after the fruiting of the second generation was 14. We therefore planted 14 seeds per pot to produce the third generation. The stress placed upon the third generation plants was extremely evident even to the naked eye. It was also reflected in the measurements taken. Due to these plant responses, it was not possible to take photosynthesis measurements at the fruiting stage. Where the first two generations (with 4 and 10 plants per pot respectively) had produced 10 and 14 seeds per pot, the third generation produced only 5 seeds per pot.

Once the *Brassica rapa* population had collapsed, we collated all measurements for biomass, energy content and numbers and calculated the equilibrium age distribution population.

The values are given in the table. For ease, and for an immedicay of comprehension, population numbers have been scaled up and expressed such that the average number over the *B. rapa* cycle is 1,000 entities.

	Avg. indiv. mass	**Avg. indiv. energy**	**No. plants/seeds**
Planting (seed) stage	0.001171 grams	1.0168 joules	1,096
Leaf stage	0.049772 grams	7.0214 joules	767
Flowering stage	0.065033 grams	15.2321 joules	724
Fruit stage	0.087173 grams	13.9591 joules	662
Dry seed stage	0.104874 grams	15.5578 joules	1,751
Seeds produced	0.001171 grams	1.0168 joules	1,096

Having determined the equilibrium age distribution population, we then proceeded to the purpose of the experiment: to calculate the scale and extent—in grams of biomass and joules of energy—of the energy and resources that *Brassica rapa* expends specifically upon Darwinian competition.

The results are very clear. If *Brassica rapa* was intelligently designed—i.e. if it was completely free from Darwinian competition and evolution—then the data for the equilibrium age distribution popuation makes it clear that each seed of the species would only have to make use of 52.7872 joules of energy and take on 0.30802 grams of biomass to produce the seeds of the next generation. But in reality … each *B. rapa* seed uses 54.0121 joules of energy, and avails itself of 0.3279 grams of biomass for that specific purpose. *B. rapa* uses 0.01988 grams of biomass and 1.2249 joules of energy over and above that which would be required by an intelligently designed plant. It expends that energy and uses those resources for no reason other than compensating for the losses in numbers that happen over the cycle. Those losses in numbers are entirely a result of Darwinian competiton, which is the young outnumbering the old in the manner described by Darwin. If such compensatory efforts are not made, then any species becomes extinct, and it is possible to measure the resources and energy used for that purpose. The procedure followed is given above. The theoretical basis for the process, and an outline of the methodology, is available elsewhere on this site.

These figures are beyond dispute. Unlike all previous attempts we have given an exact figure both in kilogrammes of matter and joules of energy to demonstrate that *Brassica rapa* is not intelligently designed and that it is subject to Darwinian evolution. As is required of science, the data is repeatable. The experiment is simple in concept and can be repeated in any laboratory. There is only one possible source and one possible reason for the 0.01988 grams of biomass and 1.2249 joules of energy we have measured in this experiment. The plants were, after all, confined in pots within a sealed enclosure. Therefore, Darwinian competition and evolution is the only source for the given figures, which have been precisely measured and quantified. Similar values can be rapidly determined for any living organism whatever, using the theories and the procedures outlined elsewhere on this site. If a species is proposed as one free from Darwinian competition and evolution, then it must demonstrate specific values easily calculable from any living specimen. It must then demonstrate those exact values—no more and no less. If, as was the case with *B. rapa*, the proposed species fails to demonstrate the calculated values, then it cannot be free from the environment, free from competition, and intelligently designed.