

The first genetically modified<sup>1</sup> animals are coming to life in transgenics laboratories around the world, and they are heading for the supermarket shelves, journalist Sean Ryan [SO:n raI@n] looks at what is happening and the issues that we have to consider.

## The brave new world of transgenics

Look at the word 'transgenics' in the title. What do you think it means? Break it into two words and explain what the two halves mean.

### Look what's cooking

At an American government re-  
search<sup>2</sup> centre in Beltsville, Mary-  
land, Dr Bob Wall looked unhappily  
at the oddly shaped piglets<sup>3</sup> falling  
5 about<sup>4</sup> in their straw and he sighed<sup>5</sup>.  
The experiment was finished and he  
knew it.

Wall had staked his reputation<sup>6</sup> on  
the creation of a 'Schwarzenegger  
10 pig' that would have put him among  
the leaders of a farming revolution  
for the 21st century. The experi-  
mental animals' rapid growth had  
promised so much; but now they  
15 were no longer doing well. This was  
the second such trial to end in frus-  
tration and failure. The first Beltsville  
pigs, their growth increased by cow  
genes, went lame<sup>7</sup> with arthritis at  
20 an early age. They had heart prob-  
lems and bulging eyeballs. For the  
second experiment, a chicken gene  
was introduced into another group of  
piglets. The gene made their bodies  
25 grow big and meaty; but by the time  
they were three months old their  
legs could hardly support them.

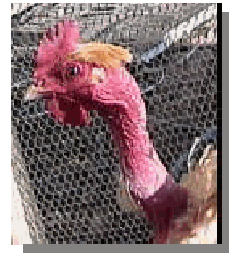
"Some of the animals just get  
weak and then they can't stand up,"  
30 said Wall. "If you look at the mus-  
cles, you see some of the good ef-  
fects. The muscles are getting lar-  
ger. But you also see conditions that  
are similar to degenerative<sup>8</sup> dis-  
35 eases that are found in humans."

This is the brave new science<sup>9</sup> of  
'transgenics' or 'genetic engineer-  
ing': taking sequences of DNA and

40 either altering them and putting them  
back into the same species or intro-  
ducing them into a different species.

The pigs are not alone. Australian  
scientists are working on a 'self-  
shearing<sup>10</sup>' sheep whose wool will  
45 drop off by itself. In Canada, they  
have come up with a transgenic  
salmon<sup>11</sup> that grows to 3.7 times the  
normal size. Israeli researchers

have used genetic  
50 engineering to  
make 'naked  
neck<sup>12</sup>' chickens  
with 40% fewer  
feathers. Because  
55 they are cool, they  
eat more, put on



weight<sup>13</sup> faster and go for slaughter  
and on to the supermarket sooner.  
Having changed the physical make-  
60 up<sup>14</sup> of animals with varying degrees  
of success, scientists are looking  
forward to the day when they can  
alter behaviour. Already, there are  
transgenic turkeys altered so as to  
65 lay up to 20% more eggs. Dr Wall  
expects that the genes that make  
bears hibernate<sup>15</sup> in the winter will  
soon be found. By introducing them  
into sheep and cows, scientists  
70 could create hibernating livestock  
and in this way save a huge amount  
of money on winter feed. How  
should we view such prospects<sup>16</sup>?  
Will consumers say no to food on  
75 their supermarket shelves that has  
been genetically engineered? Or will  
the benefits of this new science out-

weigh<sup>17</sup> the potential for repug-  
 nance<sup>18</sup>?  
 80 Some claim that there is little dif-  
 ference between ‘unnatural’ animals  
 resulting from selective breeding<sup>19</sup>  
 and the products of genetic engi-  
 neering. But repugnance there cer-  
 85 tainly is. The pressure group<sup>20</sup>  
 Compassion in World Farming says  
 that the failed development of some  
 transgenic animals shows the dan-  
 gers of the technology. “Of 50,000 to  
 90 100,000 genes in farm animals we  
 know the function of only 1% to 2%.  
 Modifying the genome so of an ani-  
 mal is like playing with a chemistry  
 set<sup>21</sup> that has had the labels re-  
 95 moved.” On the other hand, Israeli

Professor Avigdor Cahaner, creator  
 of the ‘naked neck’ chicken says  
 such advances are necessary to  
 feed the hungry, growing popula-  
 100 tions of many Third World countries.  
 Geneticists like Cahaner are confi-  
 dent that the objections will be over-  
 come<sup>22</sup> if their technologies are  
 shown to provide ‘decent’ food  
 105 safely in a way that is kinder to ani-  
 mals and easier on the environment,  
 issues regarded as important by  
 seven in ten consumers in a recent  
 survey for one large supermarket  
 110 chain.

**Sean Ryan (adapted)**

<sup>1</sup> *modified*: altered, changed; <sup>2</sup> *research* [-'-]: work of finding out new things in science; <sup>3</sup> *oddly-shaped piglets*: baby pigs with a strange shape; <sup>4</sup> *falling about*: falling to the ground everywhere; <sup>5</sup> *sigh* [saI]: seufzen; <sup>6</sup> *staked his reputation on*: seinen Ruf riskierte; <sup>7</sup> *went lame*: became unable to walk; <sup>8</sup> *degenerative*: körperlich verfallend; <sup>9</sup> *brave new science*: wonderful new science, ironic reference to Miranda's words “Brave new world” in Shakespeare's *The Tempest* when she wrongly thought everything was suddenly wonderful; <sup>10</sup> *self-shearing* [ˈSI@riN]: selbstscherend; <sup>11</sup> *salmon* [ˈs&m@n]: Lachs; <sup>12</sup> *naked neck*: with nothing covering the skin of the neck; <sup>13</sup> *to put on weight*: to get heavier; <sup>14</sup> *physical make-up*: structure of the body; <sup>15</sup> *hibernate*: sleep through the winter; <sup>16</sup> *prospects*: things that one sees in the future; <sup>17</sup> *to out-weigh*: to be more important than; <sup>18</sup> *repugnance*: Widerwille; <sup>19</sup> *selective breeding*: Auswahlzüchtung; <sup>20</sup> *pressure group*: Interessenverband; <sup>21</sup> *chemistry set*: Chemiebaukasten;

### Answer the questions on the text:

1. Why were the pigs so important to Dr Wall?
2. What went wrong with the first Beltsville pigs?
3. What are the problems with the second group?
4. What other animals have been used in experiments?
5. What is the advantage of ‘naked neck’ chickens?
6. What is the next step for genetic engineers?
7. What are the arguments against genetic engineering?
8. Which issues concern supermarket customers?
9. What is meant by the following?
  - “objections will be overcome” (ll. 102f.)
  - “‘decent’ food” (l. 104)

# The brave new world of transgenics

## Language Exercises

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### 1) Give a verb

a) trial (16)    b) degenerative (34)    c) objections (102)    d) easier (106)

### 2) Give a noun

a) grow (25)    b) weak (29)    c) altering (39)    d) provide (104)

### 3) Give an adjective

a) experiment (6)    b) revolution (11)    c) effects (31f.)    d) scientists (61)

### 4) Synonym

a) finished (6)    b) altering (39)    c) faster (57)    d) create (70)

### 5) Antonym (opposite)

a) much (14)    b) meaty (25)    c) repugnance (78f.)    d) removed (94f.)

### 6) Explain briefly

a) transgenics (Headline)

### 7) What is meant by

a) "had promised so much" (13f.)

### 8) Turn into passive

"How should we view such prospects?" (72f.)

### 9) Replace "look" (30) by "looked" and rewrite.

### 10) Make the following sentence negative

"But you also see conditions [...]" (33)

### 11) Replace the underlined part by an alternative construction:

"Because they are cool, they eat more". (44ff.)

### 12) Replace the underlined word by its noun and rewrite

"the oddly shaped piglets" (4)

## Tafelbild: Transgenics

genetically modified animals	achievement / idea	problems
<ul style="list-style-type: none"> <li>• Bob wall: "Schwarzenegger Pig" (cow genes)</li> </ul>	rapid growth	<ul style="list-style-type: none"> <li>• arthritis (went lame)</li> <li>• heart problems</li> <li>• bulging eyeballs</li> </ul>
<ul style="list-style-type: none"> <li>• Bob wall: "Schwarzenegger Pig" (chicken genes)</li> </ul>	big and meaty bodies	<ul style="list-style-type: none"> <li>• legs couldn't support them</li> <li>• degenerative diseases</li> </ul>
<ul style="list-style-type: none"> <li>• Australia: self-shearing sheep</li> </ul>	wool drops off by itself	
<ul style="list-style-type: none"> <li>• Canada: transgenic salmon</li> </ul>	grows 37 times the normal size	
<ul style="list-style-type: none"> <li>• Israel: naked neck chickens</li> </ul>	put on weight faster	
<ul style="list-style-type: none"> <li>• transgenic turkeys</li> </ul>	lay up to 20% more eggs	
<ul style="list-style-type: none"> <li>• planned: hibernating livestock (bear genes)</li> </ul>	save money on winter feed	