

TRADITIONAL BIOTECHNOLOGY

DID YOU KNOW THAT LONG AGO PEOPLE NOTICED THAT MILK LEFT FOR A FEW DAYS TURNS THICK AND SOUR? THAT'S HOW YOGHURT AND CHEESE WERE MADE.

REALLY?

THERE WAS ALSO A SCIENTIST WHO NOTICED THAT CERTAIN MOULDS STOP BACTERIA FROM GROWING. THAT DISCOVERY LED TO ANTIBIOTICS.

YOU DON'T SAY...

HEY DAD, HAVE YOU EVER NOTICED HOW LITTLE WE NOTICE THESE DAYS?

HMM...

NOTICE! If you notice this notice you will notice that this notice is worth noticing.

DAD?

TRADITIONAL BIOTECHNOLOGY HAS ALWAYS RELIED ON PEOPLE NOTICING CHANGE, AND PUTTING THAT CHANGE TO USE.

HUMANS BEGAN GROWING CROPS AND KEEPING ANIMALS THOUSANDS OF YEARS AGO.

THEY NOTICED THAT FEATURES WERE PASSED FROM ONE GENERATION TO THE NEXT AND SELECTED PLANTS AND ANIMALS FOR THE NEXT GENERATION.

SO THOSE THAT GREW FASTER OR BIGGER FRUITS WERE CHOSEN TO PRODUCE THE NEXT GENERATION, WHILE THE OTHERS WERE NOT.

OVER TIME PLANTS AND ANIMALS BEGAN TO RESEMBLE THE VARIETIES WE KNOW TODAY.

THEN

NOW

A CHEESE AND WINE PARTY

MILK IS LEFT IN THE SUN TO SOUR, THICKEN AND BECOME AMASI, AS IT HAS BEEN DONE FOR GENERATIONS. BACTERIA IN THE MILK CAUSE THIS CHANGE.

RENNET CAN BE ADDED, (A SUBSTANCE FROM THE STOMACH OF CALVES) TO MAKE HARD CHEESES.

IN A SIMILAR PROCESS, YEAST (A FUNGUS) TURNS PLANT SUGARS INTO ALCOHOL. TRADITIONAL BEER IS MADE THIS WAY FROM MAIZE OR SORGHUM.

WINE IS MADE FROM GRAPES AND OTHER FRUITS.

A MONK, GREGOR MENDEL, WONDERED HOW THE OFFSPRING OF TWO RED FLOWERED PEA PLANTS COULD HAVE WHITE FLOWERS.

HE SUGGESTED THAT FEATURES LIKE FLOWER COLOUR WERE PASSED ON IN PACKAGES WHICH DO NOT MIX. WE NOW CALL THESE PACKAGES GENES.

CAN YOU ROLL YOUR TONGUE? DO YOU HAVE A WIDOW'S PEAK? WHAT DO YOUR EARLOBES LOOK LIKE? ALL THESE FEATURES ARE PASSED FROM PARENTS TO CHILDREN THROUGH THEIR GENES.

PENICILLIN HAVE YOU EVER SEEN MOULDY BREAD? IN 1928, ALEXANDER FLEMING WAS GROWING BACTERIA SAMPLES. IN ONE OF HIS SAMPLE DISHES SOME MOULD STARTED TO GROW. HE NOTICED THAT WHEREVER THE MOULD GREW, THE BACTERIA DIED. HE NAMED THE SUBSTANCE THAT WAS KILLING THE BACTERIA PENICILLIN. IT IS STILL USED TODAY AS AN ANTIBIOTIC.

INBREEDING

MATING CLOSE RELATIVES CAN PRESERVE A PARTICULAR FEATURE (LIKE A BLOODHOUND'S EXCELLENT SENSE OF SMELL). UNFORTUNATELY, BAD TRAITS ARE OFTEN ALSO PRESERVED.



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HYBRIDISATION

MATING DIFFERENT SPECIES TOGETHER CAN COMBINE THEIR INDIVIDUAL FEATURES, (A MULE IS THE HYBRID OF A HORSE AND A DONKEY). OFTEN HYBRIDS CANNOT PRODUCE OFFSPRING.



GLOSSARY

GENERATION - EACH GENERATION IS THE OFFSPRING OF A PREVIOUS GENERATION. YOU ARE THE OFFSPRING OF YOUR PARENTS.

GENES - A SECTION OF DNA, WHICH CONTAINS THE INFORMATION FOR A PARTICULAR FEATURE OR PROTEIN.

ANTIBIOTIC - A CHEMICAL SUBSTANCE, OFTEN NATURAL, THAT INHIBITS OR KILLS THE GROWTH, OF BACTERIA.