of California, Berkeley, and his colleagues argue that it was possibly a 'pair instability' supernova — the explosion of an extremely massive star, of a type that theorists might have expected to collapse quietly to form a black hole.

BIOTECHNOLOGY

Blood for all

Nature Biotech. doi:10.1038/nbt1298 (2007)

Bacterial enzymes that efficiently convert blood from groups A, B and AB into the 'universal' O group may lead to safer blood transfusions.

Red blood cells from groups A, B and AB contain antigens that cause life-threatening reactions if transfused into people with a different blood group. Henrik Clausen of the University of Copenhagen, Denmark, Gerlind Sulzenbacher of the Universities of Aix-Marseille, France, and their colleagues have identified two novel glycosidase enzymes that strip away these antigens. The enzyme-treated blood could then be used like group-O blood — group-O cells do not carry A or B antigens, so they can be safely given to anyone. The technology now needs to be tested in clinical trials.

MATERIALS SCIENCE

Waves of honey

Langmuir **23,** 3732–3736 (2007)

Even the simplest ingredients can give rise to complex patterns. Mark Buchanan of the University of Oslo, Norway, and his team have tackled one family of patterns — those formed when fluids containing suspended particles flow down a vertical surface.

Yoghurt running down the side of a pot, for example, is cut through by vertical, branched channels, whereas honey tends to break up into wavy horizontal bands. The researchers show that particle size determines which type of pattern is produced.

Smaller particles leave behind vertical channels, because the downward flow of the film becomes focused along certain paths by a feedback mechanism that amplifies flow rate. Wavy horizontal bands appear in suspensions of larger particles, as particles get trapped by random imperfections on the vertical surface and jam together to form stress-bearing arches. The pictures above show these effects; the fraction of large particles increases from left to right.

AM. CHEM. SOC.

MOLECULAR ELECTRONICS

A promising line-up

Nature Nanotechnol. doi:10.1038/nnano.2007.77 (2007)

Arrays of thousands of perfectly linear and parallel carbon nanotubes have been turned into transistors by John Rogers of the University of Illinois in Urbana-Champaign and his co-workers.

The researchers grew their nanotubes on quartz decorated with iron-oxide stripes that catalyse the tubes' growth. The tubes line up along the crystal axis of the substrate. Each tube could be divided into many transistors by careful placement of metal electrodes on the array's surface. Devices built in this way showed good performance — particularly in having high 'mobility', a measure of how readily current can move through them. The nanotube arrays could also be transferred from the quartz onto plastic substrates, which could be useful in flexible displays.

CELL BIOLOGY

Predictions on target

Nature Struct. Mol. Biol. doi:10.1038/nsmb1226 (2007)

A novel model might help biologists to predict the targets of microRNA molecules in animals. This is notoriously difficult, because in animals microRNAs can block the translation of messenger RNA (mRNA) into proteins without matching precisely the sequence to which they bind.

Devised by Ye Ding at the Wadsworth Center of the New York State Department of Health and Victor Ambros of Dartmouth Medical School in Hanover, New Hampshire, and their colleagues, the model takes into account the structure of the target mRNA, calculated with a program called Sfold. It assumes that microRNAs first find a short open stretch of mRNA to bind to, then unfurl the surrounding mRNA to complete binding.

This approach predicted strong interactions for some known microRNAs and their targets. It also correctly ruled out 11 of 12 targets predicted for a particular microRNA by sequence matching that were not borne out by experiments.

JOURNAL CLUB

Adina Paytan
Stanford University, California

A palaeoceanographer worries not about corals, but about coral reefs.

To understand what the consequences of human-induced CO_2 increases might be, I study how atmospheric CO_2 concentrations fluctuated in the past.

One outcome of high atmospheric CO_2 that is inevitable is ocean acidification. Atmospheric CO_2 dissolves in sea water, lowering the pH of the ocean's surface layer.

We expect this to create problems for marine creatures that precipitate their skeletons from calcium carbonate, because the mineral dissolves in acid. Some researchers have suggested that scleractinian corals might even be driven to extinction.

But what does the geological record tell us? Corals' reef-building fossils have appeared and disappeared over the past 200 million years and despite periods of elevated atmospheric CO_2, the organisms did not go extinct.

A recent experiment (M. Fine & D. Tchernov *Science* **315,** 1811; 2007) resolves this apparent paradox. The team grew scleractinian corals for a year in sea water with a lower-than-normal pH. They found that the corals reproduced and grew happily in this acidic environment — albeit without their hard skeletons. The corals adjusted their skeleton-forming physiology in response to the different growing conditions.

So corals seem to be quite adaptable. But I would like to know whether other calcifying organisms have such physiological versatility.

Moreover, we have to remember that although corals may survive in an ocean with a lower pH as sea-anemone-like organisms, they are currently major contributors to the intricate physical structure of coral reefs. What will be the future of these ecosystems if their calcium-carbonate scaffolding disappears? Will our grandchildren enjoy the spectacular beauty of these 'rainforests' of the ocean?