groundwork for stem cell experiments. The new approach would "allow the science to move forward," Smith says.

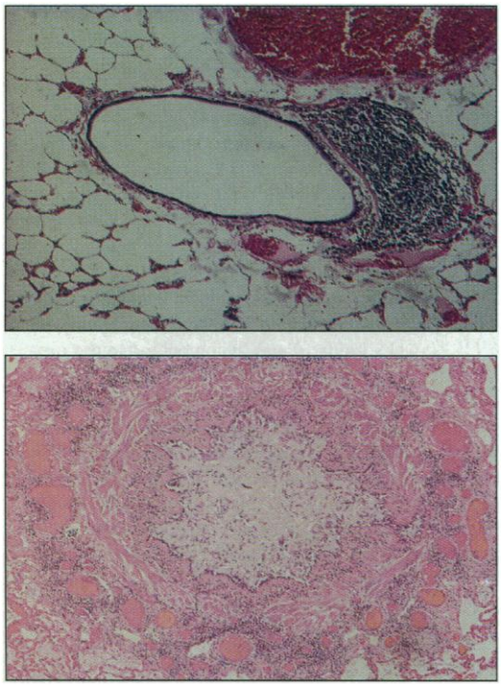
The decision on whether to accept these recommendations, however, rests with the health ministry and the HFEA, which have not announced what they plan to do.

–ELIOT MARSHALL

IMMUNOLOGY

Interleukin-13's Key Role in Asthma Shown

As any sufferer can tell you, an asthma attack is nothing to sneeze at. In a dramatic—and dangerous—overreaction by the immune system, the lungs pump out mucus and inflammatory molecules, clogging and swelling constricted airways; in severe cases, all airflow is cut off, and the attack can be fatal. Now, on pages 2258 and 2261, two independent teams present evidence that an immune system messenger called interleukin-13 (IL-13) may be a key culprit in such attacks. The results come from mouse studies, but if they hold up in humans, they suggest two promising targets for antiasthma therapies.



Taking your breath away. A normal lung is clear (*top*), but the molecule IL-13 may trigger mucus production and airway tightening, as shown in a patient who died of an asthma attack (*above*).

Although IL-13 was known to play a role in asthma, it was typically overshadowed by its better-known sibling molecule, interleukin-4, another member of the cytokines—a group of messenger molecules that help coordinate the body's immune responses. The new work suggests, however, that IL-13 was unjustly overlooked. "[The work] alerts people who have dismissed IL-13 to its importance, along with IL-4, in asthma," says immunologist Charles Maliszewski of Immunex Corp. in Seattle.

Until now it was difficult to separate the roles of IL-13 and IL-4, because they seemed to have very similar effects and dock on very similar receptor complexes at the surface of immune system cells. But a new molecule that selectively mops up IL-13 from airways has allowed the two teams of scientists to clarify the roles of these twin messengers—and show that IL-13 is a key player in its own right.

The new molecule, developed by immunologist Debra Donaldson of Genetics Institute in Cambridge, Massachusetts, is a soluble version of a recently cloned piece of a cell surface receptor that is specific to IL-13. The molecule binds to the cytokine, preventing it from attaching to its receptors.

Immunologist Marsha Wills-Karp of Johns Hopkins University and her colleagues gave the IL-13 blocker to mice already primed for an asthma attack. When the researchers exposed the mice to an allergen, the IL-13 blocker prevented airway tightening and the increase in mucus production typical of asthma. Conversely, giving IL-13 to mice not primed for an attack caused airway tightening and an increase in eosinophils, a kind of inflammatory cell prevalent in asthmatic lungs but scarce in healthy tissue.

In independent work, Gabriele Grünig and David Corry of the University of California, San Francisco, and their colleagues came up with similar results. The team applied either an inactive control protein or a drop of IL-13 blocker to the nasal passages of a different strain of mice, then exposed the animals to an asthma-inducing protein. The mice that received the IL-13 blocker had almost no airway tightening. They also had roughly one-third of the eosinophils and only half of the mucus-producing goblet cells seen in mice that received only the allergen. The team also tested IL-13 and IL-4 head-to-head by applying them directly to the mice's nasal passages. The mice that received IL-13 appeared to have worse symptoms. "While IL-4 plays a role," Corry says, "IL-13 may be more potent."

The papers present "very convincing evidence that IL-13 has a role in these mouse models," says immunologist Paula Jardieu of Genentech in South San Francisco. But few asthma researchers, including Jardieu, are ready to discount IL-4. They note that IL-4 prompts immature T cells to develop into a type of cell called T_H2 (for T helper 2), which are a hallmark of asthma and allergic diseases. These cells produce IL-13, more IL-4, and several other asthma-inducing molecules. "Maybe IL-13 does more on a quantitative basis, but you don't get T_H2 cells in absence of IL-4," says immunologist Lanny Rosenwasser of National Jewish Medical and Research Center in Denver. And without T_H2 cells, he says, there is no asthma.

Several researchers say that perhaps a more promising drug target than either cytokine is the portion of the receptor molecule on immune system cells that is shared by both IL-4 and IL-13. Indeed, in Corry's experiments, a strain of mice genetically engineered to lack this part of the receptor did not develop signs of asthma when they were given either cytokine. Several companies are already seeking an effective way to block the receptor's signaling. "[The cytokines] won't give you asthma without that receptor," Corry says. "That kind of bottleneck is the perfect target for designing new therapies."

–GRETCHEN VOGEL

FISHERIES SCIENCE

Papers Posit Grave Impact of Trawling

WASHINGTON, D.C.—A group of marine scientists has lobbed a rhetorical warning shot across the bows of the world's trawling fleets. In a press conference this week, they presented evidence that dragging heavy nets across the seafloor causes far more environmental damage than does the more visible clearing of forests. Some trawlers are returning fire, however, saying that the scientists have overstated their case and that some fishing grounds have remained productive despite more than a century of trawling. Caught in the crossfire are government fisheries officials, who believe the new findings will fuel but not settle an increasingly rancorous debate over whether to curtail trawling in some heavily fished waters.

The latest battle over sustainable fishing was triggered by a suite of seven papers released on Monday* and by a flotilla of results discussed last week at a conference in the United Kingdom.† Some seafloor researchers and the American Oceans Campaign, a Washington, D.C.–based environmental group, hope the findings will prompt an outcry against the largely invisible impact of trawling, a technique traditionally confined to shallow coastal seas that has recently extended its reach into waters up to 2

* *Conservation Biology*, December 1998.
† "Effects of fishing on non-target species and habitats: Biological, conservation and socio-economic issues," Baumaris, Anglesey, Wales, 7 to 10 December 1998.

CREDITS: (TOP) WARNOCK ET AL., *PRACTICAL PATHOLOGY OF CHEST DISEASE*, 1996; (BOTTOM) MARTHA WARNOCK