nature genetics
volume 8 no. 4 december 1994

Italy's Telethon on target

In the early 1960s, an unusual family from Virginia came to the attention of two physicians, Alan Emery and F.E. Dreifuss. The family suffered from muscular dystrophy, but although the disorder clearly displayed an X-linked mode of inheritance, it was noticeably less severe than the more common, fatal form of X-linked muscular dystrophy named after the pioneering work of Guillaume Duchenne de Boulogne a century earlier. There were eight affected males in the Virginia family: as young children, they began to walk on their toes. Gradually, the proximal muscles of the upper limbs became affected, and contractures of the elbows were noticeable. Further studies in this and other families revealed that whereas the atrophy of the muscles is relatively confined, the syndrome is accompanied by cardiac conduction defects and potentially fatal heart blockage.

The gene for Emery-Dreifuss muscular dystrophy (EDMD) was mapped in the late 1980s to the end of the long arm of the X chromosome, but despite the keen interest among many groups in plucking disease loci from the fertile area of Xq28, it has taken until now to isolate the true gene. Writing on page 323 of this issue of *Nature Genetics*, Daniela Toniolo and her colleagues from Pavia in Italy describe the characterization of a novel gene from Xq28, one of eight transcripts expressed in brain and/or muscles that they previously felt were most likely to represent the EDMD locus. They find that in all five patients examined with EDMD, this gene harbours mutations that truncate or otherwise affect production of the corresponding protein.

The EDMD gene product, which has been dubbed 'emerin', consists of 254 amino acids and provides two slim clues to its potential function. First, there is a stretch of hydrophobic residues in an otherwise hydrophilic sequence near the C terminus, suggesting that the protein possesses a membrane-spanning domain. Second, there is significant homology with a family of recently described, alternatively spliced polypeptides known as the thymopoietins. The function of these molecules is as yet unclear, but they are related to bovine thymopoietin, a peptide first purified 20 years ago that is known to affect neuromuscular transmission.

The successful identification of the EDMD gene is a timely boost for one of Italy's leading grant-awarding bodies, the Telethon Foundation, which funded much of Toniolo's work. Early this month, Telethon will host its annual fund raising drive on Italian television, closely modelled on similar events in France and the United States. Telethon has previously focused on muscular dystrophy research, but is now ambitiously expanding into other areas. Most significantly, the organization has just founded the Telethon Institute of Genetics and Medicine (TIGEM), at the San Raffaele Biomedical Science Park in Milan, which will be directed by Andrea Ballabio. TIGEM will concentrate on the isolation of disease genes by positional cloning and their functional analysis, as well as offering core facilities such as linkage mapping for outside investigators. Doubtless, TIGEM will hope to emulate the discovery of the EDMD gene many times over.

Correction: Last month's editorial neglected to mention that Syd Mandelbaum, in association with Peter Kurth, arranged for Dr Mark Stoneking to analyse hair samples thought to be from the late Anna Anderson.