

From far, from eve and morning

And yon twelve-winded sky,

The stuff of life to knit me

Blew hither; here am I.

Now - for a breath I tarry

Nor yet disperse apart -

Take my hand quick and tell me,

What have you in your heart.

Speak now, and I will answer;

How shall I help you, say;

Ere to the wind's twelve quarters

I take my endless way.

A. E. Housman: *A Shropshire Lad*

A Metaphor for Evolution

Gale Rhodes

Analysis of the chemistry of living organisms reveals that this poem's metaphor about the origins and nature of life is wonderfully apt:

The stuff of life to knit me

Blew hither; here am I.

The picture of life that emerges from scientific analysis down to the molecular level is one of beautifully intricate structure that apparently just happened! It happened in a quite natural but wholly unpredictable manner as the consequence of the properties of atoms. This intricate structure does not just underlie function, it establishes function: the properties of substances, the courses and rates of even the most complex processes -- movement, reproduction, consciousness, identity, love -- all depend upon molecular structures and interactions. To me, knowledge of the molecular basis of these processes makes them even more wondrous and beautiful.

In the grand scheme of the universe, each of us is here for only a moment. The lives of the molecules that compose us are even more fleeting. When you look at a table of turnover rates of biomolecules, sometimes expressed as their half-lives, you find that all the molecules in your body are relatively short-lived. Phospholipids in the brain, components of the membranes of nerve cells and the cells that envelop them, have a half life of 200 days, one of the longest half lives among organic bodily components. Fifty percent of muscle protein is degraded and replaced every 30 days. For liver protein it's only five or six days, while the half-life of glycogen (starch) in muscle and liver is only 12 to 24 hours. Even as you tarry "for a breath", your molecules flow through you like water; you are only in part the person you were yesterday. You as a recognizable entity may not "disperse apart", but you are almost illusory from this perspective.

The narrator of the poem expresses a sense of urgency:

**Take my hand quick and tell me
What have you in your heart?**

And with

How shall I help you, say?

expresses an endearing sentiment about how we might make use of our short burst of existence. What better can we do than be of help?

The atoms that compose you now have been part of many other objects, and will move on to be part of many more, both inanimate and living.