Songs available online at
faculty.washington.edu/crowther/Misc/Songs/

(scroll down to "Biochemistry and Cell Biology")

SONG: "Genotype Versus Phenotype"

I'll start this by noting
That genes encode proteins,
Which dictate cell function and form.
So if a gene mutates,
The cell may gain new traits
Far better or worse than the norm.

CHORUS:
Genotype -- ooh...
The alleles you possess;
Nothing more, nothing less --
Versus phenotype -- ooh...
Your appearance and health
And reproductive success.

In some situations,
There is a mutation,
Yet phenotype stays just the same.
So guessing the genotype
Just from the phenotype
Can be a difficult game.

CHORUS

SONG: "Cell Division"

Prophase: chromosomes can be seen if stained.
Metaphase: chromosomes line up in a plane.
Anaphase: chromosomes migrate toward the poles.
Telophase: chromosomes once again unroll.
Cytokinesis: two daughter cells are formed.
Interphase: "the calm before the storm"?

SONG: "The Nirenberg Concerto"

Nirenberg. (Can you crack...)
Marshall Warren Nirenberg!
(Can you crack the code?)
Nirenberg. (Can you crack...)
Marshall Warren Nirenberg!
(Can you crack the code?)

From bases . . . to amino acids.
From UUU . . . to phenylalanine.
From bases . . . to amino acids.
From mRNA . . . to a new protein!

Nirenberg. (Can you crack...)
Marshall Warren Nirenberg!
(Can you crack the code?)
Nirenberg. (Can you crack...)
Marshall Warren Nirenberg!
(Can you crack the code?)
Nirenberg!

SONG: "Membrane Permeability"

What can cross a lipid bilayer?
Lipids, gases, that's about all.
Large or charged or polar species
Cannot cross a lipid wall.

What can cross a lipid bilayer
If some proteins get installed?
Large or charged or polar species
Join or leave the cytosol.

SONG: "Amino Acid Alphabet Song"

A, C D E F G,
H I K, L-M-N P.
Q R S, T, V
W and Y.
Now I know my amino acids,
Next time, join in; don't be placid!

SONG/POEM: "The Waltz of the Ribosomes"

T G G, C T T, G G & A.
The DNA bases are the letters I say.
A T G, A C C, A G & C.
They're part of a gene from the family tree.

A C C, G A A, C C & U.
Transcription of DNA is easy to do.
U A C, U G G, U C & G.
The A's go with U's, and the G's go with C's.

Threonine, glutamic acid, and proline.
The mRNA gets translated to protein.
Tyrosine, tryptophan, serine, and stop!
Translation is halted by a stop codon cop.

What have we heard here, and what have we learned?
There's DNA, RNA, and protein in turn.
RNA's copied from DNA strands,
And protein is built using RNA plans.

Such is the way by which cells can make hay
From T G G, C T T, G G & A.

SONG: "Photosynthesis Calypso"

Pho-to, Pho-to-synthesis!
Daylight come and the plants make food.
Pho-to, Pho-to-synthesis!
Daylight come and the plants make food.

Three carbons, four carbons, five carbons, six!
(Daylight come and the plants make food)
That's what you get when CO_2 is fixed!
(Daylight come and the plants make food)

Come Mr. Tally Man, tally up the glucose.
(Daylight come and the plants make food)
Plants convert it into starch and into sucrose.
(Daylight come and the plants make food)

SONG: "RNA Clover"

Ah, amino acids turn over,
But they need a chauffeur:
RNA clover.

Ah, some RNA's longer,
Like a line of a conga.
This one is closer
To the leaves of a clover.

Yeah, translation's a sweet thing
Requiring three things:
A ribosome and these things:
RNA message, and RNA clover.

RNA clover, bring that amino acid over.
RNA clover, bring that amino acid over.
RNA clover, bring that amino acid over.
RNA clover, over and over...