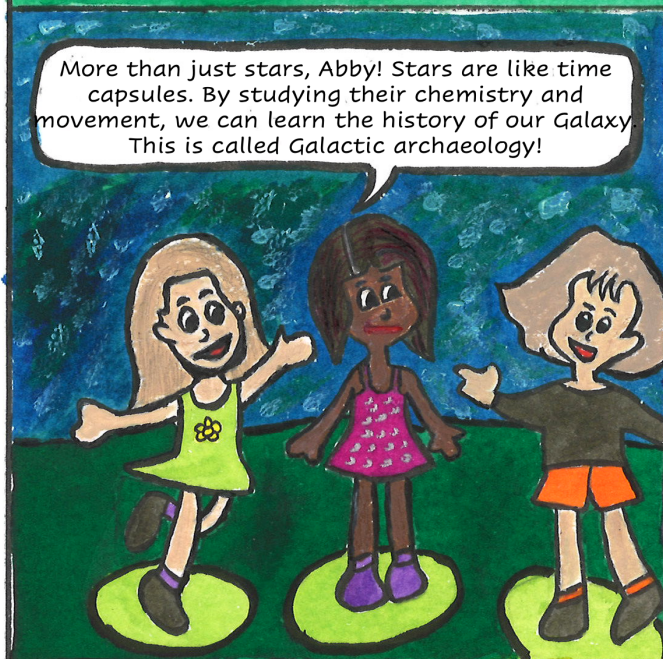


Summary for non-experts



Woa! This is beautiful!
Is it just
a ... bunch
of stars?



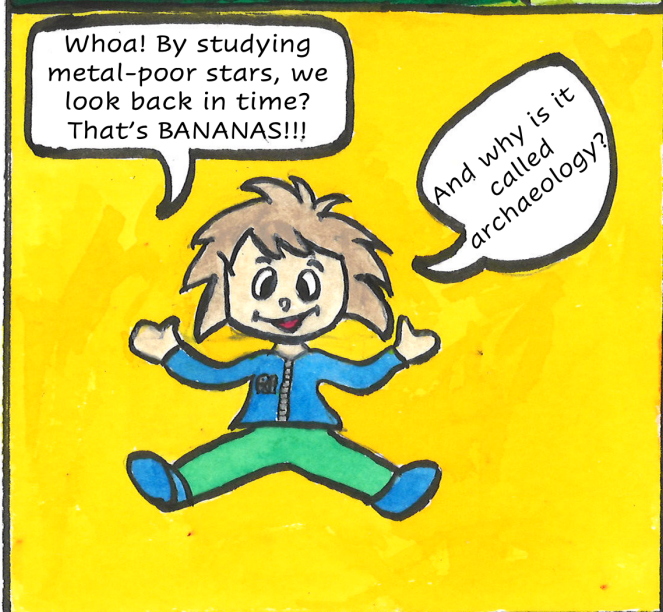
More than just stars, Abby! Stars are like time capsules. By studying their chemistry and movement, we can learn the history of our Galaxy. This is called Galactic archaeology!



Old stars are our fossils

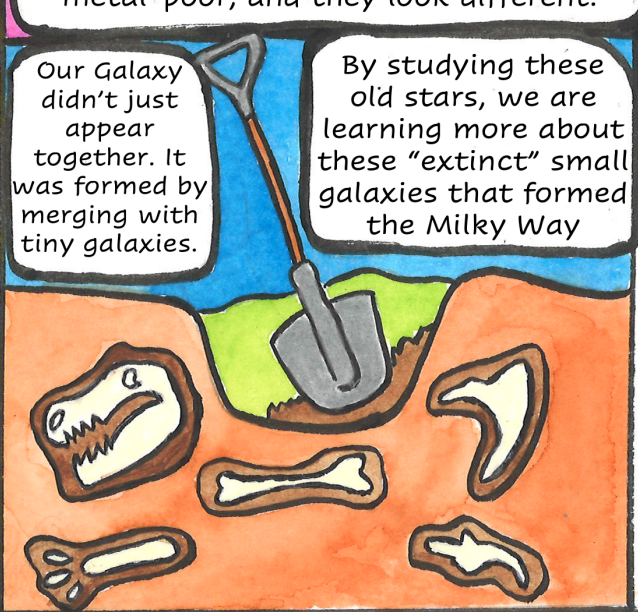
Who's ready for a Galactic dig?

The chemistry of a star is like a fingerprint. Using telescopes, we split the star's light into colours, called spectra, to see which elements it has. Older stars are metal-poor, and they look different.



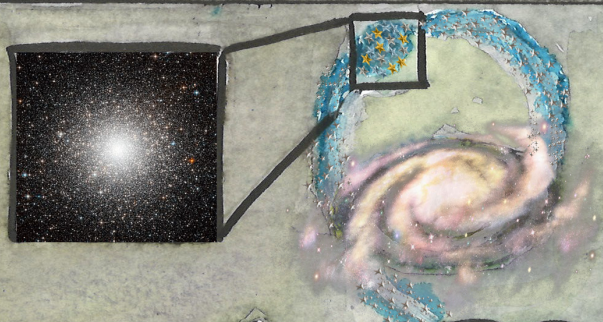
Whoa! By studying metal-poor stars, we look back in time? That's BANANAS!!!

And why is it called archaeology?



Our Galaxy didn't just appear together. It was formed by merging with tiny galaxies.

By studying these old stars, we are learning more about these "extinct" small galaxies that formed the Milky Way



Some halo stars even form streams – “river” of stars left behind by small galaxies or star clusters that the Milky Way swallowed long ago, like billions of years ago! When smaller star clusters or dwarf galaxies are gradually torn apart by the gravitational pull of the Milky Way, they form these long elongated band of star streams.

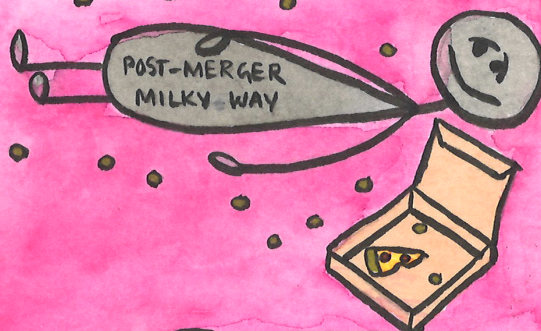


The stars from these small galaxies are in the Galactic halo around the disc stars that we see here on the sky.

This is so cool, Han! So, each stream tells us which galaxies the Milky Way snacked on? Are all the streams the same? What do you think, Emmy?



That’s the best part, Martolina. It gets so much cooler when the stream is not coherent, i.e., on the same orbital direction, but not together on sky. Some streams are “phase-mixed” within the Galactic halo, larger mergers that are scattered like crumbs after a big meal. This happens for major mergers from long ago.



So, the Milky Way has been munching on smaller galaxies for ages? It is one big cosmic foodie, just like Cellie!



PRISTINE



Using surveys like Gaia and Pristine, the lowest metallicity stellar stream from a star cluster, C-19 was discovered. I study this stream and found members far away from the main body of the stream, making it longer than we previously thought.

Wow, C-19 is so cool! Hope we find more such metal-poor star clusters in the Local Group



Let's look at the big fishes!
Our Galaxy merged with
another big galaxy called
Gaia-Enceladus-Sausage.
This happened over 8-11
billion years ago, and it is
the last major merger of the
Milky Way.



Sorry, I just
think it's so
amazing that
we get to study
Galaxy mergers.



Wow,
girls!
Galaxy life
sounds
pretty
intense.



When galaxies clash,
the Milky Way gains
new stars and a
little character. So
cool! Did the Milky
Way already have a
disc back then?



Yes, the Milky Way already
had a disc, and this merger
kicked up the disc stars
into random halo orbits



Woa, stars getting
tossed around?
That sounds crazy,
Shara! Enjoy
observing those
metal-poor stars.
They are
awesome, indeed!



I am glad
that this
was a long
time ago
and the
galaxy is
now fit as a
fiddle! The
Milky Way
is now here
to stay!!



Well, not quite. In 4.5
billion years, the Milky
Way is going to merge
with Andromeda. I
simulate them. It is
going to be a big
cosmic firework. Who
is ready to see it?



Woah, Woudje, thanks
for the heads up. I will
be watching upside-
down if I have to.

