

NUCLEOSYTHESIS

an activity pack for curious kids

Puzzles
Worksheets
Quiz questions

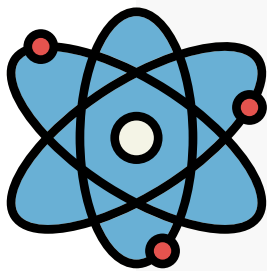
Welcome to this nucleosynthesis-themed activity pack from Pale Blue Marbles!

This supplements my blog post
**'Nucleosynthesis with playdough:
exploring the cosmic origins of life's
building blocks'**, an activity to teach
your child all about where atoms
come from.

If you haven't read the post, I recommend
going through it with your child so that
they know what atoms are and how they
were made in the big bang and in stars.

I have included activities at different
levels – choose the ones appropriate for
your child.

Cultivate curiosity and enjoy!



If you like the activities, please spread the
word: comment on the blog posts or on
the [Facebook page](#) and invite your friends
to like and subscribe!

You can also follow me on [Twitter](#),
[Instagram](#) and [Pinterest](#) for more activity
ideas and astrobiology.



WHAT'S INSIDE

Two atomic word searches
Match the nuclei to the elements
Complete the atoms
Nucleosynthesis quiz



Atomic word search: tricky

These 16 words are all connected with atoms. How many can you find? They might be vertical, horizontal, diagonal or backward. Good luck!

B V T Z P E B I C P F E D C J X S F X U I F N P H
M K V Y R T L K S Z T C Y P I R U P X W N W X N S
I N S E O C B E B M G Q L D C Z E C N O I M A Q Q
V P B J T I N O M O L S Y C X B L N R D K S G F U
E H E N O B R A C E C M P O X D C T X M V P C P P
E Y R L N F D Y J F N O E V U V U B O U I B G X X
Z N Y X N I E K D M W T B E P E N I P D I P Q R A
R A L U D H K D W A W A Y Y N P D U Y K P W M N B
L D L O N H Q Y F E H E Y P I V G H N P Y H R U S
K G I N F E U Q L I K S O J B W C E U K K R F S F
P I U E E E G E R N F V V B R I S N L A Z A Z E Q
U E M R K M C O C Q X B I G B A N G H Y M A C F F
T Q R P L T E Z R X V N V A J F B E P G H S A N J
Q F H I R Z W G H D Z D W H W M L L G I C M A N G
F T D O O K Y E I Y Y O H J R I V A S F W L H L O
Z W N A R D X J T X H H K G U Q J Q Q N V C V O P
G P L S G J I V P M Y M R M K H N O R T I S O P P
F L F T C S Z C G M I F F R T D G Q T R I K V N T
T E P P J I M E T A N T Z B F M R H O I N X Q O U
T M J T V M S R E A H D F R Q S X O N T A T S G R
R L T E H K Q N K V B K I B C I U J S H I B Q H G
Y L V A N F D M K C J L F W V X R R R D F P S B O
O E X N A U H D J M D X E I F N A J N Z D U O G P
N U C L E O S Y N T H E S I S T C Z J L B R P W U
S A I L Y Z Q C J Q F C L R S Q I Q Q H B N Y O V

ATOMS
CARBON
HELIUM
NUCLEOSYNTHESIS
PLASMA
STARS

BERYLLIUM
ELECTRON
HYDROGEN
NUCLEUS
POSITRON

BIG BANG
ELEMENT
NEUTRON
PERIODIC TABLE
PROTON

Atomic word search: easy

These 11 words are all connected atoms. How many can you find? They might be vertical, horizontal, diagonal or backward. Good luck!

S C A R B O N E M A
U X C M W O L S U T
E T T W R E T E I O
L S J T C A L R L M
C F U T R E S Q E S
U E R S M J Z D H H
N O N E G O R D Y H
N X N Z N O T O R P
M T J Q I H U Z S E
B I G B A N G L Q D

ATOMS

CARBON

ELEMENT

HYDROGEN

NUCLEUS

STARS

BIG BANG

ELECTRON

HELIUM

NEUTRON

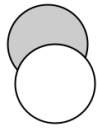
PROTON

Atomic nuclei

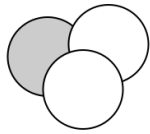
Match the atomic nuclei to the right elements. Protons are grey, neutrons are white.



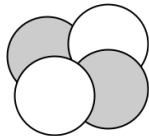
Helium



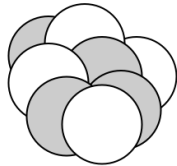
Carbon



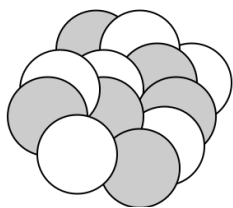
Beryllium



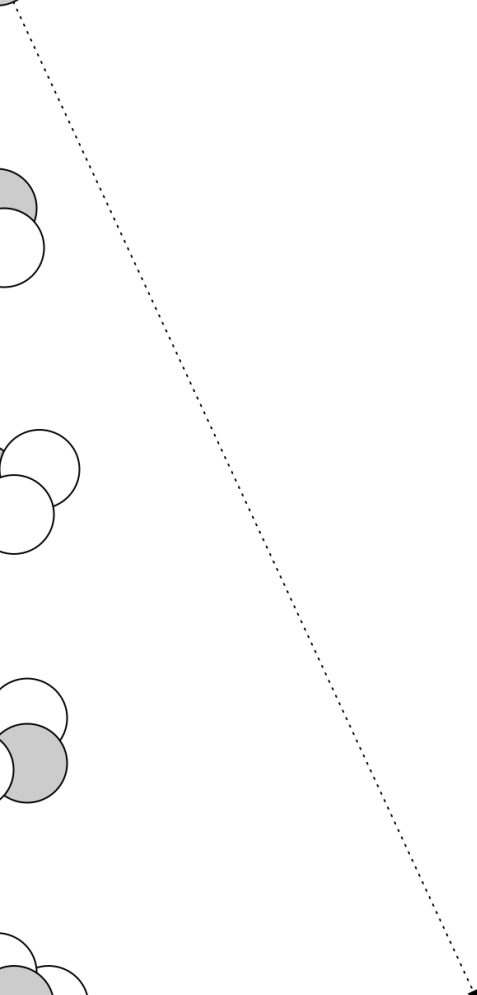
Deuterium



Hydrogen



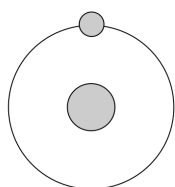
Tritium



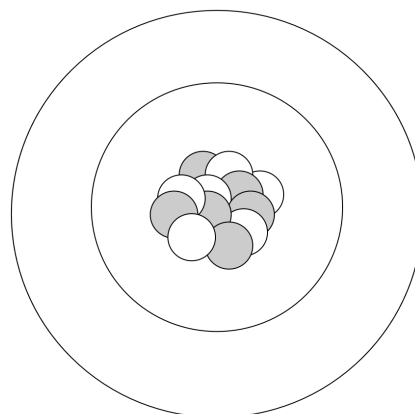
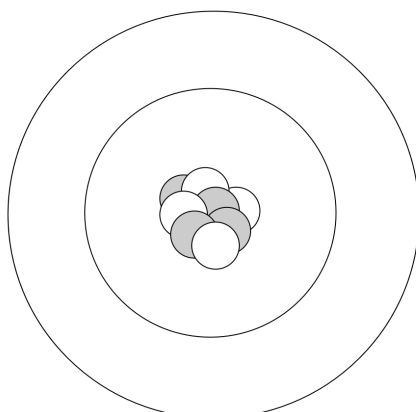
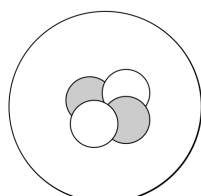
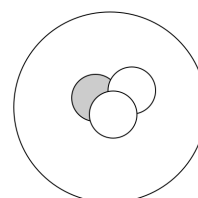
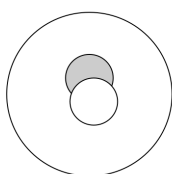
Neutral atoms

Neutral atoms contain an equal number of positively charged and negatively charged particles. Label these nuclei and add electrons to their electron shells. Two electrons can fit in the innermost shell and up to eight can fit in the second shell.

The first has been done for you. Protons (positively charged) are the larger grey circles and neutrons (no charge) are the white circles. Electrons (negatively charged) are the small grey circles.



Hydrogen



Nucleosynthesis Quiz

Test your knowledge of atoms and nucleosynthesis with these quiz questions! You can find all the answers in the 'Nucleosynthesis with playdough' post on the Pale Blue Marble blog.

- Q1. Name the three subatomic particles that make up atoms.
- Q2. How many protons and neutrons does a hydrogen nucleus have?
- Q3. What is an isotope?
- Q4. Name two isotopes of hydrogen.
- Q5. What percentage of the atoms in the Universe are hydrogen?
- a) 50%
 - b) 100%
 - c) 75%
 - d) 25%
- Q6. How much of the hydrogen in the Universe was created in the big bang?
- a) 1 %
 - b) 10 %
 - c) 60 %
 - d) 100 %
- Q7. What element is made inside stars by fusing hydrogen?
- Q8. What happens to the helium inside a star when the hydrogen runs out and the star's core collapses?
- Q9. How old are the hydrogen atoms in your body?
- Q10. What is an exploding star called?