

ASU iGEM Crochet Patterns

Hey there! We are ASU iGEM, a synthetic biology team competing in the International Genetically Engineered Machine (iGEM) 2025 competition cycle. This year, our project, UNiglobin, focuses on addressing global blood shortages and aims to make blood more accessible worldwide. We are developing an enzymatic purification process of A, B, and AB blood antigens to convert any blood type into universal O blood using specialized enzymes (*galactosidases*). These project-inspired amigurumi patterns are designed to help bring the community into the world of synthetic biology. We hope you enjoy making them! Feel free to tag us in your creations on instagram @asuigem and check out our Linktree linktr.ee/igemasu!

Beginner's Guide and Shorthand:

- Working yarn: The yarn attached to the skein that you are working with
- Stitch marker: Marks the beginning of the round
 - You can place the stitch marker on the first stitch of a new round to keep track of where you are
- Yarn over (YO): Using your hook, go under your working yarn and then hook the working yarn
- Pull through: Pull the yarn you have just hooked through the specified stitch or the loops on the hook (see the types of stitches below to determine what to do)
- Magic Circle: The start of the pattern. There are many great magic circle YouTube tutorials!

Types of Stitches:

- Single crochet stitch (sc): The most basic stitch.
 - Insert your hook into the next stitch, YO and pull through that stitch so you have 2 loops on your hook. YO and pull through both loops.
- Increase (inc): Making 2 stitches from one.
 - Complete 2 single crochet stitches in 1 stitch.
- Decrease (dec): Making 2 stitches into one.
 - Insert your hook from below into the front loops only of the next 2 stitches, YO and pull through both front loops so you then only have 2 loops on your hook. YO and pull through both loops.
- Half-double crochet (hdc): A little looser and taller than a single crochet stitch.
 - YO, insert your hook into the next stitch, YO again and pull through so that you have 3 loops on your hook, and pull through all 3 loops.

Red Blood Cell Amigurumi Pattern



Supplies:

- Red yarn (4 / medium weight)
- Crochet hook (4 mm - 5 mm)
- Safety eyes and backing (We used 6 mm)
- Stitch marker
- Poly-fil stuffing
- Sewing needle
- Black embroidery thread
- Scissors

Pattern:

Round 1: Magic circle (6 stitches total)

Round 2: [inc], repeat 5 more times (12 stitches total)

Round 3: [1 sc, 1 inc], repeat 5 more times (18)

Round 4: [2 sc, 1 inc], repeat 5 more times (24)

Rounds 5-8: [hdc], repeat in every stitch (24)

Insert the safety eyes in between rounds 4 and 5, on opposite ends of work (directly across from each other over the magic circle). Don't forget to secure with the backing.

Round 9: [2 sc, 1 dec], repeat 5 more times (18)

Round 10: [1 sc, 1 dec], repeat 5 more times (12)

Lightly stuff with Poly-fil stuffing.

Round 11: [dec], repeat 5 more times (6)

Finish off, leaving a long tail for sewing. Use the tail to close the hole tightly by weaving through either the front or back loops of the last 6 stitches. This can be done 2 at a time, as seen in Figure 1.

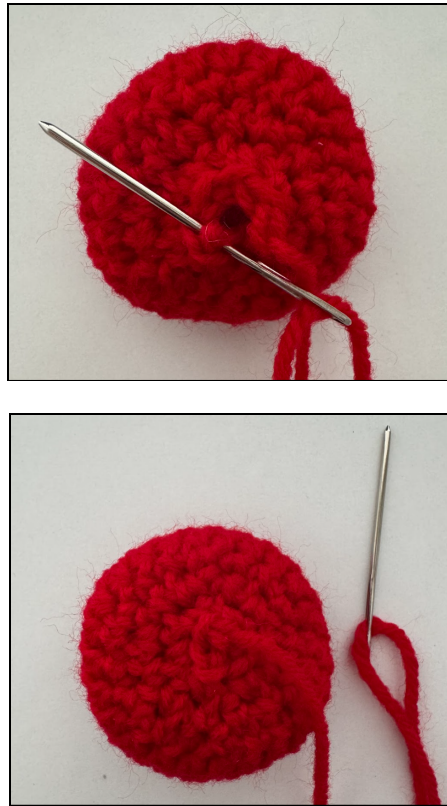


Figure 1.

Guide the tail with the needle through the middle of the bottom to the top, straight through the magic circle. Pull to create a depression on the bottom of the work. (Figure 2)



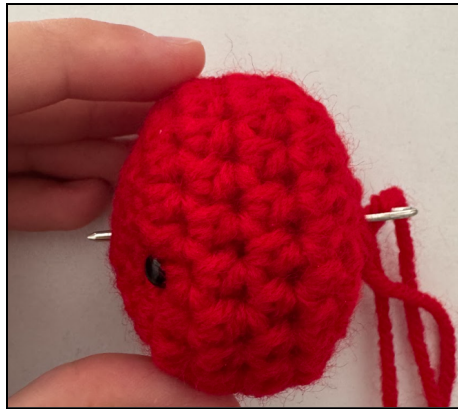


Figure 2.

Using the same thread, insert the needle somewhere between the magic circle round and round 2, and pull through to the middle of the bottom, creating a depression on the top. Continue this process until satisfied with the shape. (Figure 3)



Figure 3.

Using the black embroidery thread (or black yarn), sew a curve below the depression on the top of the work and below the eyes to create the smiling mouth.

Blood Drop Amigurumi Pattern



Supplies:

- Red yarn (4 / medium weight)
- Crochet hook (4 mm - 5 mm)
- Safety eyes and backing (We used 6 mm)
- Stitch marker
- Poly-fil stuffing
- Sewing needle
- Black embroidery thread
- Scissors

Pattern:

Round 1: Magic circle (6 stitches total)

Round 2: [inc], repeat 5 more times (12 stitches total)

Round 3: [1 sc, 1 inc], repeat 5 more times (18)

Round 4: [2 sc, 1 inc], repeat 5 more times (24)

Rounds 5-8: [sc], repeat in every stitch (24)

Round 9: [2 sc, 1 dec], repeat 5 more times (18)

Round 10: [sc], repeat in every stitch (18)

Insert the safety eyes in between rounds 6 and 7. Don't forget to secure with the backing.

Lightly stuff with Poly-fil stuffing.

Round 11: [1 sc, 1 dec], repeat 5 more times (12)

Rounds 12-13: [sc], repeat in every stitch (12)

Round 14: [dec], repeat 5 more times (6)

Rounds 15-16: [sc], repeat in every stitch (6)