



# Inverness Science Festival

## Cellular shy knitting patterns

### May 2022

Red Blood Cell

T Cell

Cancer Cell

Stem Cell

MRSA

Insulin Secreting Cell



Please note these designs are to be used for ornamental plushes not as toys.  
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# Cellular Coconut Shy

Create a coconut shy – place paper cups upside down on a table top and place a knitted cell on each. Have a set of small bean bags or soft balls to ‘throw’ at the cells.

## Activity

Red blood cells, T lymphocytes, insulin containing beta cells and stem cells are all ‘good’ cells. Each play an important part in maintaining a healthy human body. MRSA and Cancer cells cause harm to the human body.

Using just four bean bags your task is to hit the harmful cells off the coconut shy whilst leaving the ‘good cells’ in place.

# Red Blood Cell

## Knitting pattern

Techniques used include knitting in the round, increasing and decreasing.



### What you need

Size 4 Double pointed needles.  
About 10g Red double knitting.  
Two 12mm safety eyes.  
Stuffing.  
Tapestry needle to finish.

### Stitches and abbreviations

K: Knit  
KfB: increase by knitting in the front and back of the stitch.  
K2tog: decrease by knitting two stitches together.  
Note: the number of stitches and grouping of increases and decreases are intentionally irregular, this is to create a more organic look. The basic idea is to increase or decrease by 8 stitches on most of the increase or decrease rounds. Since the total number of stitches is not a factor of eight there will be a few odd stitches here and there in each of the increase and decrease rounds.

### Pattern

Leave a long tail, cast on six stitches and distribute on the double pointed needles for knitting in the round.

Round 1: \*K1, [KfB] twice, repeat from \* ( 10 stitches)  
Round 2: \* [KfB] twice, K1, [KfB] twice repeat from \* ( 18 stitches)  
Round 3: K  
Round 4: \*[K1, KfB] 4 times, K1, repeat from \* ( 26 stitches)  
Round 5: K  
Round 6: [k1, KfB] 5 times, K1, [KfB,K2] 3 times, K1 (34 stitches)  
Round 7: K  
Round 8: [K3, KfB] 4 times, K1, [K3, KfB] 3 time, K4, KfB (42 stitches)  
Round 9: K  
Round 10: \* KfB,K2 repeat from \* (56 stitches)  
Round 11: K  
Round 12: \*K3, KfB repeat from\* (70 stitches)  
Round 13 to Round 17: K  
Round 18: \*K3 K2tog repeat from \* (56 stitches)  
Round 19: K  
Round 20: \*[K3,K2tog] 4 times, K1, repeat from\* (42 stitches)  
Round 21: K  
Round 22:\*[K3,K2tog] 4 times, K1 repeat from \* (34stitches)  
Round 23: K  
Round 24: K1, [K2tog,K2] 3 times, K1, K2tog, K1 repeat from \* (26 stitches)  
Round 25: K  
Round 26: \*[K2tog,K1] 4 times, K1, repeat from \* (18 stitches).  
Round 27: \*K1[K2tog] 4 times, repeat from \* (10 stitches).

Stuff the toy, flattening it out and stuffing the rim more firmly to get the biconcave (donut) shape of a red blood cell. Add safety eyes, if you are using them, at this point, or sew on buttons. Finish sewing off.

# T Cell Lymphocyte

## Knit a sphere with bobbles every four rounds

Techniques used include knitting in the round, increasing and decreasing to make ball. Bobbles are added to the surface to represent the T cell receptors.



### What you need

Size 4 Double pointed needles.

About 20g Blue or White double knitting.

Two x 9mm safety eyes or black buttons.

Stuffing.

Tapestry needle for finishing.

### Stitches and abbreviations

K: Knit

P: Purl

KfB: increase by knitting in the front and back of the stitch.

K2tog: decrease by knitting two stitches together.

sts: stitches

Bobble: Same stitch work K1,P1,K1,P1,K1. Pass the first four stitches ( one at a time) over the final K1 stitch.

### Pattern

Leave a long tail, cast on six stitches and distribute on three double pointed needles for knitting in the round.

Knit one row. Mark the 1<sup>st</sup> stitch of the row with a different color wool. You can do this every so often to keep a note of the beginning stitch.

Round 1: KfB 6 times (12 sts)

Round 2: \*K1, Bobble, K2\*, repeat from \* to \* 3 times (3 bobbles created)

Round 3: \*KfB,K1\*, repeat \* to \* 6 times (18 sts)

Round 4: K

Round 5: \*KfB, K2\* , repeat \* to \* 6 times (24 sts)

Round 6: \*K1, Bobble, K2\*, repeat from \* to \* 6 times (6 bobbles created)

Round 7: \*KfB, K3\* repeat \* to \* 6 times (30 sts)

Round 8: K

Round 9: \*KfB, K4\* , repeat \* to \* 6 times (36 sts)

Round 10: \*K1, Bobble, K2\*, repeat from \* to \* 9 times (9 bobbles created)

Round 11: \*KfB, K5\* , repeat \* to \* 6 times (42 sts)

Round 12: K

Round 13: \*KfB, K6\* , repeat \* to \* 6 times (48 sts)

Pound 14: \*K1, Bobble, K2\*, repeat from \* to \* 12 times (12 bobbles created)

Round 15, 16, 17: K

Round 18 \* K1, Bobble, K2\*, repeat from \* to \* 12 times (12 bobbles created)

You could add some stuffing now, to about row 15 level. The continue to add as you go when working decrease rounds.

Round 19: \*K2tog, K6\*, repeat \* to \* 6 times (42 sts)

Round 20: K

Round 21: \*K2tog, K5\*, repeat \* to \* 6 times (36 sts)

Round 22: \*K1, Bobble, K2\*, repeat from \* to \* 9 times (9 bobbles created)

Round 23: \*K2tog, K4\*, repeat \* to \* 6 times (30 sts)

Round 24: K

If using safely eyes add these here, remember to continue adding stuffing.

Round 25: \*K2tog, K3\*, repeat \* to \* 6 times (24 sts)

Round 26: \*K1, Bobble, K2\*, repeat from \* to \* 6 times (6 bobbles created)

Round 27: \*K2tog, K2\*, repeat \* to \* 6 times (18 sts)

Round 28: K

Round 29: \*K2tog, K1\*, repeat \* to \* 6 times (12 sts)

Round 30: \*K1, Bobble, K2\*, repeat from \* to \* 3 times (3 bobbles created)

Round 31: K2tog 6 times (6 sts)

Cut yarn and thread through six remaining stitches – add any additional stuffing – before pulling the thread tight and sew ends in.

# CANCER

## Knitting pattern

Techniques used include knitting in the round, increasing and decreasing to make ball. Create the outgrowths by crocheting on to completed cells.



### What you need

Size 4 Double pointed needles.

About 20g Grey mohair

Small quantity Black mohair or DK

Crochet Hook

Two x 12mm safety eyes or black buttons.

Stuffing.

Tapestry needle for finishing.

### Stitches and abbreviations:

K: Knit

P: Purl

KfB: increase by knitting in the front and back of the stitch.

K2tog: decrease by knitting two stitches together.

sts: stitches.

### Pattern

Leave a long tail, cast on six stitches and distribute on three double pointed needles for knitting in the round.

Knit one row. Mark the 1<sup>st</sup> stitch of the row with a different color wool. You can do this every so often to keep a note of the beginning stitch.

Round 1: KfB 6 times (12 sts)

Every alternative even row: Knit

Round 3: \*KfB, K1\*, repeat \* to \* 6 times (18 sts)

Round 5: \*KfB, K2\*, repeat \* to \* 6 times (24 sts)

Round 7: \*KfB, K3\* repeat \* to \* 6 times (30 sts)

Round 9: \*KfB, K4\*, repeat \* to \* 6 times (36 sts)

Round 11: \*KfB, K5\*, repeat \* to \* 6 times (42 sts)

Round 13: \*KfB, K6\*, repeat \* to \* 6 times (48 sts)

Round 15, 16, 17: K

You could add some stuffing now, to about row 15 level. The continue to add as you go when working the decrease rounds.

Round 19: \*K2tog, K6\*, repeat \* to \* 6 times (42 sts)

Round 21: \*K2tog, K5\*, repeat \* to \* 6 times (36 sts)

Round 23: \*K2tog, K4\*, repeat \* to \* 6 times (30 sts)

Round 24: K

If using safely eyes add these here, remember to continue adding stuffing.

Round 25: \*K2tog, K3\*, repeat \* to \* 6 times (24 sts)

Round 27: \*K2tog, K2\*, repeat \* to \* 6 times (18 sts)

Round 29: \*K2tog, K1\*, repeat \* to \* 6 times (12 sts)

Round 31: K2tog 6 times (6 sts)

Cut yarn and thread through six remains stitches – add any additional stuffing – before pulling the thread tight and sew ends in.

Take completed cell and crochet hook. Push hook through surface and create single chain using black wool.

Crochet a single chain 10 to 20 stitches in length. Repeat around the surface of the cell 15 to 20 times.

# STEM CELL

Techniques used increasing and decreasing across the rows. Creating a circular piece.

## What you need

Knitting needles 4mm.

10g Light Pink double knitting.

5g Dark Pink double Knitting.

Two 9mm safety eyes.

Stuffing.

## Stitches and abbreviations

K: Knit

P: Purl

KfB: increase by knitting in the front and back of the stitch.

K2tog: decrease by knitting two stitches together.

St st : Stocking stitch



## Pattern

### STEM Cell Body

Cast on 10 stitches using light pink yarn.

Row 1: K1, KfB to last stitch K1 (18 sts)

Row 2 and following even numbered rows: P

Row 3: K1, KfB to last stitch K1 (34 sts)

Row 5: K1,\*KfB, K1\* repeat to last stitch, K1 (50 sts)

Stocking stitch row 6 to 30

Row 6 and following even numbered rows: P

Row 7 and following odd numbered rows: K

Row 31: K2, \*K2tog, K2\* repeat to last stitch, K1 (34 sts)

Row 32 and following even numbered rows: P

Row 33: K1, K2tog to last stitch, K1 (18 sts)

Row 35: K1, K2tog to last stitch, K1 (10 sts)

Cut yarn leaving a long length, pull through stitches on needle to finish.

Carefully sew up the two side edges, when halfway start stuffing the cell and add the safety eyes. Continue to sew up and stuff, finish off thread.

### Nucleus

Cast on 10 stitches using dark pink yarn.

Row 1: K1, KfB to last stitch K1 (18 sts)

Row 2 and following even numbered rows: P

Row 3: K1, \*KfB, K1\* repeat to last stitch, K1 (26 sts)

Row 5: K1, \*KfB,K2\* repeat to last stitch, K1 (24 Sts)

Row 6: P

Cast off in K, leaving along length for finishing.

When cast off the piece will curl forming a circle, sew these edges in place. Place the knitted circle on to the top right side of the cell (like a hat at an angle) and sew in place.

# MRSA

Techniques used include stocking stitch, increasing and decreasing.

## What you need

Knitting needles 4mm.

12g White DK wool

5g Black DK wool

Two 9mm safety eyes.

Stuffing.

Tapestry needle for finishing.

## Stitches and abbreviations

K: Knit

P: Purl

KfB; increase by knitting in the front and back of the stitch.

K2tog: decrease by knitting two stitches together.

St st: Stocking stitch.

Sts: stitches.



## Pattern

### Body pieces ( create 5x)

Cast on 10 stitches using white..

Row 1: K1, \*KfB, K\* to last stitch K1 (14 sts)

Row 2 : P

Row 3: K1, \*KfB, K\* to last stitch K1 (20 sts)

Row 4: P

Row 5: K

Row 6: P

Row 7: K1, \*KfB, K2\* to last stitch K1 (28 sts)

Row 8: P

Row 9: K

Row 10: P

Row 11: K1, \*K2tog, K2\* to last stitch K1 (20 sts)

Row 12: P

Row 13: K

Row 14: P

Row 15: K1, \*K2tog, K1\* to last stitch K1 (14 sts)

Row 16: P

Row 17: Cast off.

For 4 pieces: carefully sew up the two side edges, when halfway start stuffing the body. Continue to sew up and stuff, finish off and sew ends of thread into body.

For one piece: as above but add a set of safety eyes.

### Cape

Cast on 24 stitches using Black.

Row 1: K1

Row 2 and following even numbered rows: P

Row 3: K1, K2tog to last stitch K (xx sts)

Row 5: K1, K2tog to last stitch K (xx sts)

Row 7: K1, K2tog to last stitch K (xx sts)

Row 9 Cast off leaving a wool about 12cm long.

Cut another length of wool about 15cm long. Tie on to the other side of castoff end – cut length to 12cm.

Take four of the white tubes and sew together in an X shape. Place 5th piece - with eyes on top in middle of the X and secure in place. Tie cape around join.

# INSULIN SECRETING BETA CELL

Techniques used include knitting with two colours across row, stocking stitch, increasing and decreasing stitches.

## What you need

Knitting needles 4mm.

12g Green DK wool

Small quantity blue and white DK

Two 9mm safety eyes.

Stuffing.

## Stitches and abbreviations

K: Knit

P: Purl

KfB: increase by knitting in the front and back of the stitch.

K2tog: decrease by knitting two stitches together.

St st: Stocking stitch.



## Pattern

Front: Cast on 10 stitches using green

Row 1: K1, \*KfB, K\* repeat from \* to\* to last stitch K1 (14 sts)

Row 2 : P

Row 3: K1, \*KfB, K2\* repeat from \* to\* to last stitch K1 (18 sts)

Row 4: P

Row 5: K1, \*KfB, K2\* repeat from \* to\* to last 4 stitches K4 (23 sts)

Row 6: P

Row 7: K1, \*KfB, K2\* repeat from \* to\* to last stitch K1 (30 sts)

Row 10: P

Add blue next row continue in main colour green unless otherwise indicated.

Row 11: K9, K3 in Blue, K18

Row 12: P17, P5 Blue, P8

Row 13: K7, K7 Blue, K16

Row 14: P15, P9 Blue, P6 Green

Row 15: K1, K2tog Green, K3, K9 Blue, K15

Row 16: P15, P9 Blue, P5

Row 17: K1, K2tog Green, K3, K7 Blue, K16

Row 18: P17, P5 Blue, P5

Row 19: K1, K2tog, K4, K3 Blue, K15, K2tog, K1

Row 20: Purl

Row 21:K1, K2Tog, Knit to last 3 stitches, K2Tog, K1(24 sts)

Row 21: Purl

Row 22: K1, K2Tog, Knit to last 3 stitches, K2Tog, K1 (22 sts)

Row 23: Purl

Row 24: K1, K2Tog, Knit to last 3 stitches, K2Tog, K1 (20 sts)

Row 25: Purl

Row 26: K1, K2Tog, Knit to last 3 stitches, K2Tog, K1 (18 sts)

Row 27: Purl

Row 28: K1,\* K2Tog, K2,\* repeat from \* to \* to last stitch, K1 (14sts)

Row 29: Purl

Row 30: K1,\* K2Tog, K2,\* repeat from \* to \* to last stitch, K1 (10sts)

Row 31: Purl

Row 32: Cast off

## Back: Green only

Cast on 10 stitches using green

Row 1: K1, \*KfB, K\* repeat from \* to\* to last stitch K1 (14 sts)

Row 2 : P

Row 3: K1, \*KfB, K2\* repeat from \* to\* to last stitch K1 (18 sts)

Row 4: P

Row 5: K1, \*KfB, K2\* repeat from \* to\* to last 4 stitches K4 (23 sts)

Row 6: P

Row 7: K1, \*KfB, K2\* repeat from \* to\* to last stitch K1 (30 sts)

Row 10: P

Row 11: K

Row 12: P

Row 13: K

Row 14: P

Row 15: K1, to last 3 sts K2Tog, K1

Row 16: P

Row 17: K1, to last 3 sts K2Tog, K1

Row 18: P

Row 19: K1, K2tog, to last 3 sts, K2tog, K1

Row 20: Purl

Row 21:K1, K2Tog, Knit to last 3 stitches, K2Tog, K1(24 sts

Row 21: Purl

Row 22: K1, K2Tog, Knit to last 3 stitches, K2Tog, K1 (22 sts

Row 23: Purl

Row 24: K1, K2Tog, Knit to last 3 stitches, K2Tog, K1 (20 sts

Row 25: Purl

Row 26: K1, K2Tog, Knit to last 3 stitches, K2Tog, K1 (18 sts

Row 27: Purl

Row 28: K1,\* K2Tog, K2,\* repeat from \* to \* to last stitch, K1 (14sts

Row 29: Purl

Row 30: K1,\* K2Tog, K2,\* repeat from \* to \* to last stitch, K1 (10sts

Row 31: Purl

Row 32: Cast off.

Add safety eyes to the front piece. Place two pieces together carefully sew up the two side edges when halfway start stuffing the body. Continue to sew up and stuff, finish off and sew ends of thread into body.

## Insulin

Cast on 24 stitches using 1

Row 1: K

Row 2 P

Row 3: K

Row 4: P

Row 5: P

Row 6 Cast off.

You now have a rectangle. Sew on to front, at an angle, short side just above eye level leave about 8 stitches free – this is the secreted insulin.