

The 40th Noël

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Rated PG

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Summary: It’s Christmastime at S.T.A.R. Labs. But Kris Kringle has left Dr. Bernard Klein a rather strange gift.

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WARNING: Major geek alert! This story is written from Dr. Klein’s point of view, so I’m afraid that I allowed my mad scientist muse to totally run away with me. ;) Read (and hopefully enjoy) at your own risk!

Dr. Bernard Klein grinned broadly as he entered through the sliding glass doors of S.T.A.R. Labs and energetically stamped his heavy black boots to rid them of accumulated snow. He absolutely loved Christmas.

As he entered the foyer and began wrestling out of his coat, he breathed deeply, the myriad scents of fir trees and ginger snaps, of hot apple cider and cinnamon stimulating the G-protein coupled receptors on the olfactory receptor neurons in his superior nasal cavity, generating a unique pattern of neuronal depolarization that positively breathed the word ‘Christmas.’

Normally, Dr. Klein avoided office parties, with their requisite quotas of interpersonal interactions and — shudderingly — small talk, like the plague. Actually, to be frank, he would be much rather work with the plague (aseptically, of course). *Yersinia pestis* was a rather cute little bacterium, for an opportunistically deadly pathogen.

But the Christmas bash wasn’t just another office party. It was *Christmas*. And it was his fortieth Christmas at S.T.A.R. Labs. Dr. Klein looked around at the familiar swaths of red and green, at the garlands and the tinsel and the stack of brightly wrapped Secret Santa presents. He quickly took out his contribution — wrapped in bright silver paper with a big green bow — and added it to the pile. He hoped that Dr. Greenbaum, a postdoc working in the lab adjacent to his own, liked the book he had gotten her.

Dr. Klein swiveled his head, looking inquisitively around the brightly-lit room. His eyes lit up as they landed on the well-stocked buffet table. Small talk was always easier with a full mouth. That way, no one ever expected him to respond to their conversational gambits. He could just nod and pretend he knew what to say. To tell the truth, once a conversation had gotten past the ‘Hi, how are you?’ stage, Dr. Klein was totally at sea. And swimming had never been his forte. He just didn’t have the coordination for it.

As Dr. Klein edged his way over toward the refreshments table, he saw Dr. David Leighton stagger past, his arm in the firm grip of his wife, who was making a beeline for the door. Dr. Klein waved at his tipsy colleague, who blinked blearily at him. “Bernie!” he cried in the too-loud voice of the very drunk. “Hey! I told the wife you’d make it!” He poked the long-suffering

woman beside him in the side, and she had the grace to smile, reaching out to shake Dr. Klein’s hand briefly, even as she sidled her merrily rubicund-faced husband closer to the door. Dave impeded her progress, leaning toward Dr. Klein in an obvious attempt to be discreet. “I saw your shtocking over by the back fume hood in Dr. Bannerjee’s lab,” Dave slurred in a muted stage whisper. “Looksh like you got something exshtra shpecial this year.” Dave winked broadly at him as his wife literally shoved him out the doorway into the cold, snowy night. As the glass door slid closed behind them, Dr. Klein heard the woman lament, “Really, Dave! A little too much Christmas cheer, don’t you think?”

Dr. Klein chuckled at the antics of his colleague. It *did* look as though the hapless sot had hit the eggnog a little too hard. Ethanol certainly did disrupt normal nervous system function. Dr. Klein shook his head and resumed his interrupted course over to the buffet table, exchanging holiday wishes with several of his colleagues as he strolled through the throng of partygoers.

Meanwhile, the hint that Dave had dropped was niggling at Dr. Klein’s brain like a killer T-cell chasing after a bacterium in a blood sample; it just wouldn’t let up. So, his stocking was in the optogenetics lab, he thought excitedly. How fun! He hadn’t been over in that wing of S.T.A.R. Labs for quite a few months. Dr. Klein found his feet leading him away from the buffet table that had been his goal and turning him toward one of the long hallways of laboratories and meeting rooms that made up the bulk of the S.T.A.R. Labs complex.

The Christmas stockings were possibly Dr. Klein’s very favorite part of the annual Christmas celebration at S.T.A.R. Labs. Every year, it was like a scavenger hunt, each person poking around the various labs trying to find his or her own stocking. Being such a modern building, S.T.A.R. Labs was rather lacking in traditional chimneys, so the Christmas celebration planners had had to use the next best thing. “The stockings were hung by the fume hoods with care / In hopes that Saint Nicholas soon would be there,” Dr. Klein chuckled to himself, adapting his favorite Christmas story S.T.A.R.-Labs-style. Indeed, this tradition of hanging the employees’ Christmas stockings above the fume hoods in each of the labs had created quite a heated (albeit informal) competition between all of the different research teams, each trying to top the others in the scientific importance — and sheer coolness — of their work. Naturally, Dr. Klein’s group had won this informal competition for the last three years straight, but it was always good to check out the competition. Plus, one never knew when one’s research might dovetail with another research team’s work. Some of today’s most radical new inventions came from these unlikely collaborations.

Dr. Klein induced a negative acceleration on his body in order to stop his forward motion as he reached Lab 6540 — Dr. Bannerjee’s lab. Dr. Bannerjee was one of the scientists that he most respected and admired in this building. He had been one of the world’s leading ophthalmologists before he had transferred to S.T.A.R. Labs to study the field of optogenetics. He knew more about the visual system than any other three scientists put together (even if those other three scientists were put into a blender, homogenized, and then their DNA was recombined to make a super-scientist euploid). Dr. Klein would have loved to get the chance to work with him, but so far, their professional paths hadn’t crossed. However, they did have one ‘patient’ in common. Superman. Of course Dr. Bannerjee had never actually *met* the Man of Steel (some madman named Dr. Leit apparently kidnapped Dr. Bannerjee as he had left S.T.A.R. Labs to treat the hero’s temporary blindness), but it gave Dr. Klein a feeling of kinship with the man nonetheless.

Turning, Dr. Klein entered the lab and looked around eagerly. There were lamps of different wavelengths flashing on and off all

around the room, lighting various Petri dishes on the lab benches in constantly changing swaths of color. Wow. It looked like Dr. Bannerjee's lab had gone all out for the holiday competition. Dr. Klein paced over to the nearest Petri dish, the quest for his stocking totally forgotten. It was some sort of tissue sample. A neuronal cell culture, if he wasn't mistaken. Dr. Klein stooped, peering closely at the sample. The blue light flashing on and off over the Petri dish was inducing a time-delayed reaction in the cells. The longer the blue light was on, the more the cells glowed green. However, a burst of red light caused the fluorescence of the cells to entirely stop. Dr. Klein looked around for an explanation, finding it in a poster prominently displayed at the rear of the lab. Dr. Bannerjee had discovered a light-sensitive ion channel that allowed him to directly control neuronal depolarization with bursts of light! Incredible!

Dr. Klein rubbed together his mental hands in glee at all of the potential applications for the optogeneticist's new discovery. He backed up rapidly, getting ready to head over to the other tissue samples spread out throughout the lab when he bumped into something hard and cold. He turned around to see what it was, hoping he hadn't disturbed any of Dr. Bannerjee's impressive display, and came face to face with a stocking. *His* stocking, actually. Huh.

Dr. Klein's scientific ambitions faded as his effervescence for the Christmas holiday burst back on him full force. He would talk to Dr. Bannerjee about a possible collaboration tomorrow. But for now...

Dr. Klein reached up and grasped the fuzzy red stocking, removing it from its precarious position above the brightly-lit fume hood he had bumped into moments earlier. He reached in, his excitement at this moment no less than it was when he was five years old and unwrapping his very first gift from Santa (a microscope) after having gotten his parents up at what they termed 'a positively ungodly hour of the morning.' He had never lost that simple joy in the magic of Christmas.

Dr. Klein's brow furrowed as he reached further and further into the stocking. Still, he found nothing until his questing fingers reached the very toe of the stylized sock. It felt...like a little box. How strange.

Dr. Klein drew it out. He looked at it for a moment in confusion before slowly prying open the lid. Rather than the usual candy canes and chocolate kisses molded into the shapes of Christmas bells and snowflakes, Dr. Klein saw a pair of diamond cufflinks, their faceted faces flashing fire in the constantly changing pattern of light and darkness in the optogenetics lab.

Upon seeing that the mysterious box in his stocking contained nothing more than glorified graphite, Dr. Klein's shoulders slumped, and he dropped it onto a nearby table as if it had burned him. He didn't notice the engravings on the back of the cufflinks. On one was written "Dr. Bernard Klein." On the other, "40 Years S.T.A.R. Labs." Instead, he just stared at his feet, dismayed.

"What did I do wrong?" he wondered softly to himself, his childlike effervescence at the holiday season slowly draining from him.

"Why would someone put coal in my stocking?"

THE END

A/N: The light-sensitive ion channel described in this fic is a channelrhodopsin. In our universe, channelrhodopsins were first described in the publication: Nagel G, Ollig D, Fuhrmann M, Kateriya S, Musti AM, Bamberg E, Hegemann P (2002). "Channelrhodopsin-1: a light-gated proton channel in green algae". *Science* **296** (5577): 2395-2398. For the purposes of this vignette, I imagined that Dr. Bannerjee discovered a channelrhodopsin that was opened by blue light and closed by red

light. The neurons' green glow under the blue light was caused by a fluorescent Ca^{2+} indicator (like GCaMP), which glows green when a neuron is 'firing.'