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### Counting Cucumber Hairs

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## Counting Cucumber Hairs

PAIGE ROTH

When a college student comes home for summer, every adult and competitive parent asks two questions: “What are you doing this summer?” and “What are you doing with the rest of your life?” The first question must be answered with the maximum possible pretention and snobbery in order to bring honor to your family. The second question must be answered with excessive humility and self-deprecation but enough of a plan to assure your interrogator that you will not be living in your parents’ basement post-graduation. Nothing brings interrogating parents greater joy than hearing that their child is launching more successfully than you; however, if you prove that you are a wholesome, humble, on-the-straight-and-narrow, career bound progeny, they will no doubt smile coldly and reply, “Well, best of luck to you.”

The summer between my sophomore and junior year of college, my response to the first question went something like this: “I am researching the effects of nitric oxide inhibitor, l-nitro- $\omega$ -arginine, on plant tissue optics.” At which point my mother, with little to no regard for my reputation or self-esteem, would generally interject, “Oh, don’t let her fool you. She’s counting cucumber hairs and contemplating her navel.” With the embarrassment of a kindergartener whose mother packed her overnight underwear “just in case” on her first sleepover, I would meekly retort, “Well, not exactly...”

Cucumber seedlings do, in fact, have peach-fuzz like epidermal hairs that, when irradiated with UV light, seem to magically disappear. My job was to count these cucumber hairs using an impressive-looking microscope. Though my evidence was completely inconclusive—there really is no difference

between the number of hairs on a regular cucumber seedling than a sunburnt one—that was not the point. The point was that a man with all his faculties and complete prior knowledge of my capabilities has asked *me* to do *research*. And it is a truth universally acknowledged that research is the ultimate trump card with competitive parents inquiring about your summer plans.

To be clear, I am not particularly good at science. This overt characterization of my aptitude is not, by any means, meant to be self-deprecating like my future-career-plans answer. Throughout high school, teachers politely steered me away from advanced placement science and math courses in favor of my apparent aptitude for English and history. As my dad would regularly remind me, “You sing, you jog, you ride horses, you write poetry and can generally be found curled up on the couch with a book—how on earth are you going to make a living?” I would politely retort with some much needed perspective—I could be a drug addict with a tattoo, pierced tongue, drop-out boyfriend, and a short skirt—but I got his point.

To my credit, I made some halfhearted attempts at rounding out my schedule with what my dad (and apparently the majority of the adult population) considered “real classes”—like chemistry. After receiving a B in my first high school chemistry course, I mustered every ounce of confidence I could find behind my acne and sweaty bangs to ask my teacher if I should take Advanced Placement chemistry. Mrs. Boes was barely five feet tall. Her athletic build, sleek black hair, make-up-less natural beauty, knack for triathlons, evident intelligence, and soft-spoken nature proved she had everything figured out. She discreetly pulled me out in the hallway like a resident doctor giving her first, “We did everything we could” speech to a new widower. With a smooth, tanned hand resting hesitantly on my upper arm, Mrs. Boes looked up at me with warm brown eyes full of apology and

said, "Paige, you have so many talents, but science just is not one of them."

At the time, my heart leapt. Sorry, Dad, even the teacher said I'm no good. Oh, well! Excuse in hand, my love of playwriting and singing took on a new conviction. I had a calling and a passion and should not deviate. I spent my time in choir concerts singing heartwarming pieces in foreign languages about nature and lust and God. I rode my majestic black Dutch Warmblood horse, Hershey, over rolling fields of crunchy red leaves with fall air nipping my rosy cheeks. And during my sophomore year of high school, I started writing plays at the Curious Theatre.

Curious was certainly an apt title for the little theatre built within an abandoned church in the heart of downtown Denver. At Curious, a collection of nauseatingly sentimental and hypersensitive writers (myself included) would sit cross-legged on the wooden floor in the back of the theatre. We would "move through the space" doing yoga or interpretive dance to the musical stylings of Fat Boy Slim or Enya before we "came together" to write our daily poem. Our instructor, Dee, would casually withdraw her lolling breast from her moss-green blouse and nurse her newborn baby—the baby from a very open affair with the theatre director (don't worry, she has since left her husband and moved in with said director)—in front of the self-righteously accepting bunch of teenagers. After one such morning, though, my friend Josh Brown did quip, "Dee, there seems to be a lot more nipple in the program this year," at which Dee laughed good-naturedly and carried on with our poem.

Dee told us we were all artists with unique stories to tell. The title "artist" seemed to grant me free rein to wear intentionally clashing colors, bandanas, red fingernails, clogs, over-sized skirts and dramatic makeup—though, at the time, I was still more comfortable in a pair of cotton shorts and a button-

down blouse. I holed up in coffee shops that prided themselves on being well-kept secrets and lost myself in characters, plots, and dialog. I angsted over the perfect line or light cue. I listened to interviews with famous playwrights and attached profound sentiment to words and language. My motto was the Mark Twain quotation, "The difference between the right word and the almost right word is the difference between lightning and a lightning bug." During those summers, I worked with delightfully enthusiastic starving actors, wrote when the spirit moved me, laughed in the sunny corners of an edgy theater, and called myself an artist.

Then, as is the case with growing up, my first-year college advisor started asking the heavy-hitting questions. From his red swiveling armchair, Dr. Maroon (the names of the professors in this essay have been disguised to ensure my graduation) thumbed through my high school transcript as I nervously surveyed his tomes of religious texts and ancient literature in the original language. Narrowing his eyes with the attentiveness of a grandparent, Dr. Maroon asked my fidgeting, sweaty-palmed freshman self, "What do you love to do? You must do that which you have a true, irrepressible passion for and settle for nothing less." My mind immediately jumped to those sunny summers with coffee, red nail polish, horseback rides, and artistic liberties. I recited the well-rehearsed answer: "Well, I like to write, sing, jog, and ride horses." But soon I grew unable to roll my eyes at my dad's mocking summation of my abilities and interests. Soon I realized that I was starting to sound rather entitled and—dare I say?—boring.

My impulse to pursue science reared its head during winter break of my freshman year, after a production of one of my plays in New York as part of the Stephen Sondheim Young Playwright's competition. I'd spent most of December in historic theatres with my blue-haired dramaturge and director, whose

hooded bald head gave him a commanding Voldemort-esque allure. I immersed myself in revisions of my play, tailored specifically to the quirks and suggestions of my actors. I workshopped new plays with esteemed playwrights at the Dramatist's Guild who asked me to keep in touch. Though everyone seemed to welcome me as one of their own, I, once again, assessed my belonging based on outward appearance. The New York native playwrights and actors donned chic black skirts, currant red lipstick, and a cigarette. I toned down my pastel skirts and floral scarves but still reeked of suburbia. And, furthermore, this whirlwind still didn't solve the problem of what I was going to major in.

Sitting across from my mom in a diner of the outskirts of Time Square, I brooded over the coming spring semester back at school.

I looked at my mom across an overpriced Caesar salad and asked, "Well, what now?"

"You write another play?" Her slightly horn-rimmed glasses winked up from her sharp nose and fierce brunette bob.

"And then what?"

"Do it all over again."

"Or that play isn't good enough, and they show me the door," I grumbled, rearranging the chicken on the salad to appear as if I'd made a dent in my lunch.

"You are eighteen. The door is still wide open. Don't be dire."

"That means I have roughly eighty-two more years of living in pursuit of the next production, rejection, writer's block. And a crippling sense of inadequacy and self-doubt."

"Not to mention financial destitution."

"Thank you for your contribution."

My mom shrugged casually, squirting a lemon into her iced tea and probing some undissolved Sweet-n-Low out from

between an ice cube cavern. “So, what? You go back to school and keep dabbling in other subjects until something less *taxing* strikes your fancy?”

“That feels like avoiding my fate.”

“Probably.”

“Devil’s advocacy is not constructive. What about horses? And vet school? And everything else I once loved.”

“You have to pick, kid. You can’t major in playwriting, veterinary medicine, and anything else that speaks to you along the way.”

“This is unsettling.” I listlessly gnawed a chunk of overcooked chicken.

“What is unsettling is indecision. You’ve taken a good run at writing. You were not a miserable failure, but your ambivalence means you need to try something else. I don’t mean dabble; I mean immerse yourself in something else—like you have with writing. It’s like marriage. You’ve got to kiss a lot of frogs and you’ve only smooched one. You can always write, but you can’t always major in science and go to vet school.”

“And if I’m a miserable failure and have abandoned my true calling?”

“So be it, but at least you know and can pick up writing again. You might just achieve something you never thought possible.”

On the plane home from New York, I mulled over the idea of attacking this seemingly insurmountable obstacle—applying to vet school—and developed an exhilarating and impulsive new sense of direction and comfort that comes with determining a clear end goal for one’s college career. I outlined an elaborate four-year plan to present to a biology advisor when I returned to campus.

Empowered by my new challenge, I strode into Dr. Black’s office with the stereotypically overzealous confidence of any pre-

med student. I wore my most professional navy blue knee-length dress and cardigan, and had curled my, at the time, lighter blond hair. When I presented the professor with my elaborate plan, calculated questions, and general pro-con list of my strengths and weaknesses as a student, he leaned back lackadaisically in his chair, rubbed his protruding belly, stared down his bespectacled nose with the engagement of a bloodhound, and said, “Let’s just take this one step at a time, sweetheart.”

My response should have been to stomp indignantly out of his office with new conviction to prove Dr. Black wrong, but, though I felt a degree of motivated underdog syndrome, my thoughts were far less logical. First, I was sure my outfit had done me in. Real science students look bedraggled. They wear athletic shorts, oversized t-shirts, running shoes, stretchy headbands pulling their distracting hair into a bun and out of their face. Real pre-med students do not wear makeup, sundresses, or have time to curl their hair. Obviously, I needed to convey that I was committing more time to my studies than my outward appearance—I supposed I could do that. Second, I was sure he could just *smell* my mathematical and quantitative ineptitude. He must have known that the adjective-heavy prose I used to describe my reasons for this sudden change of heart were hardly fitting for a linear, logical scientist. And, finally, why did this man have any reason to believe in me in the first place? I sang, jogged, rode ponies, and wrote poems.

Much to Dr. Black’s chagrin, I’m sure, I signed up for the introductory chemistry and biology “weed-out” courses. As to be expected, I flailed like a spawning salmon through those first science classes. I spent most of my time trying to blend in, again starting with the outfit. I bought Chacos, raggedy tie-headbands, and loosely cuffed cotton pants. Science majors apparently never slept, but I enjoyed my chamomile tea and eight-hour sleep regimen—perhaps this stubborn demand to maintain my



physiological functioning was keeping me from success? I made a point of incorporating my sleep deprivation into conversation with fellow science students. I went to office hours not to ask questions but to bond with the professors.

My strategy was to approach professors with questions about concepts I thoroughly understood so that, first, I would display a capacity for learning that they might otherwise doubt, and, second, so that we could bond when the professor felt that she had led me to the “Aha!” moment. Then we could both revel briefly in my learning and their wonderful teaching, and then we could transition casually into a conversation about their children, my hometown, and the torments of freshman year. It may have been solely a symptom of my charm, but I made it through those first weed-out classes with the wide-eyed surprise of an unnoticed burglar escaping the Louvre with the Mona Lisa.

My “I-just-slipped-through-the-cracks-and-have-no-business-being-here” syndrome dissipated, somewhat, one fateful night in biology lab. As I was diligently assigning character traits to a phylogeny of badgers, Dr. Shinkle made a blanket announcement to the whole class: “If any of you need pre-med advising, I would be happy to help you sort things out in office hours after lab.” I did not need any encouragement. I sprinted up to his office, four-year plan in hand. With no snide comments, he made a few tweaks and asked if there was anything else he could do for me. I admitted that yes, in fact, there was one tiny thing. I continued sheepishly, “I am very interested in research. I don’t exactly know how one gets involved, but apparently it’s something I need to do.”

Without missing a beat, Dr. Shinkle replied, “Well, I suppose you could work in *my* lab.” I looked around the disheveled lab and immediately felt at home—specifically because there was a coffee maker in the corner with a collection of notes from the building supervisor about not drinking coffee in a lab

full of toxic chemicals. Dr. Shinkle blatantly ignored common sense and rules—this was someone I could work with. Glassware covered the lab benches. Shelves were a hodge-podge of *Dr. Who* tchotchkes, dried plant samples, big band jazz records and miscellaneous amber bottles of solution. Half of the lab was taken up by a twenty-foot long dark room comprised of six sets of black curtains that separated various light locks with different growth conditions.

Dr. Shinkle is the sort of person I cannot picture doing anything other than biology. He rarely makes eye contact and sports short-sleeved button-down checked shirts, slightly disheveled khaki pants, and adventure-ready sneakers. I later learned of his talent for darts, love of Ursula LeGuin stories, and repertoire of intricate scientific or political puns. When he comes to a great conclusion, he strokes his grey beard with increased frequency, and his voice climaxes in a high-pitched falsetto. That evening, at one such moment, Dr. Shinkle continued, “I study plants. Some people don’t find plants very interesting, but you don’t have to kill anything, except cucumbers of course, and that’s why I like them.”

“I think plants sound fascinating!” Clearly I lied, but I was not about to pass up the opportunity. Today when people ask Dr. Shinkle how I came to work in his lab, he always replies with a good-natured guffaw, “Well, she just weaseled her way in!” And weasel I did. On my first day in the lab, while Dr. Shinkle started explaining the complicated foundation of our research project, I took to tidying up the lab as he gesticulated wildly—full mug of black coffee in hand. By the time he was done explaining the photo-optic effects of various UV wavelengths on plants, I had washed and organized the glassware, refilled the pipette tip holders, made neat stacks of charts on the desk, sterilized the lab bench, and started a fresh pot of coffee. Dr. Shinkle didn’t seem to mind my manic cleaning, and I rather enjoyed his in-depth

explanation of plant morphology. I liked to think we could exist as fairly symbiotic organisms.

The beginning of research felt as if someone had blindfolded me, spun me around, coated my hands in Crisco, and asked me to swing at a microscopic piñata. I could not rely on scientific explanations and had to use my own words. When Dr. Shinkle said, "Due to the absorptive properties of LNNA, we should observe decreased curvature of the hypocotyl tissue when exposed to UV irradiation," I eventually translated: "LNNA is plant sunscreen. *If* plants wear their sunscreen, they will not shrivel in the sun." One night Dr. Shinkle told me to "design a time course measuring the optimal absorptivity by *cucumis sativus* of LNNA in a five percent solution of hydrochloric acid and methanol." Again, I deciphered this foreign language: "Treat plants with the LNNA solution. Guillotine plants in three-hour increments. Marinate guillotined plants in the solution from large clear bottle. Use spectrophotometer (the machine that looks like a printer from the nineties) to see how much LNNA juice the plants exude into the marinade." When describing the nitric oxide signaling pathway, Dr. Shinkle drew out a complex map of inhibitors and promoters; I drew out a cartoon-looking diagram comparable to a Pac-Man game.

Although I am a creature that prides myself on making interpersonal connections, Dr. Shinkle was a hard nut to crack. In the evenings when I bounded enthusiastically into lab, my charming small talk fell subject to critical analysis. Dr. Shinkle critiqued my overcommitted schedule, commented on how I could improve my performance in chemistry, or told me that I should go out every once in a while to get some balance in my life. I meticulously planted my cucumbers according to his protocol and promptly processed data in desperate hope that he would affirm my fledgling scientific confidence. I even remembered to wear my sciencey clothes, like athletic shorts, t-shirts, and closed-

toe shoes meant for frantic motion. Fishing for compliments proved to no avail. Perhaps this efficient exchange was scientific? I was used to the gushing comments from my English teachers on the ends of my essays or their thoughtful, keen insights during office hours. But this was not English. Science was efficient, and fluff, like compliments, was unnecessary. I could work quietly and efficiently. There was no one else in our lab, so how could I know if Dr. Shinkle had picked a favorite other than me?

Once I learned my way around the microscopes and reflectance spectrophotometers, I would walk quietly into lab, sequester myself in my designated corner of the lab bench next to a coat rack draped with Dr. Shinkle's PhD regalia and green protective face shield that loomed over my shoulder. From behind safety goggles that resembled a scuba mask, I clicked on the purple UV lamp, which glowed like a cucumber tanning bed in the dark room. When they were done frying, I arranged the stems under a microscope that reeled in and out of focus like a trombone. A fluorescent cactus-like figure came into focus on the screen and that was the money shot. I applied colorful filters to the cucumber hair images so that they looked more like toxic amoebas than garden vegetables, counted the spiny hairs, and did real science—in isolation.

Walking home from the lab one night, I called my mother to provide the very mature and astute observation, "Mom, I don't think Dr. Shinkle likes me."

"What does it matter?" she responded in her hardened, journalistic tone.

"Well I don't want him to completely *resent* my presence."

"And what makes you say that?"

"He just sat there tonight on his computer playing solitaire while I measured my plants! I have never felt like such an inconvenience! As though I were disrupting his solitude! He's probably thinking his Nobel-prize-worthy thoughts over at his

desk while this snot-nosed kid who can barely work the pH meter fumbles around his dark room!”

“What is he doing in the lab at 10:00 at night? He is a tenured professor. He’s perfectly allowed to go home.”

“He lives really close to campus, so he said he would come in in case I needed help.”

“Paige, the man came in at 10:00 at night to help you and keep you company. You are not twisting his arm.”

Once I stopped sputtering my “buts” and “I don’t know,” convincing myself that I was a black-sheep burden in Dr. Shinkle’s otherwise prestigious existence, I thought back to the time Dr. Shinkle helped me reach a box off the top shelf of the lab because he knew I was too short to reach. I remembered the time he hovered over my shoulder while I made a graph for another class offering feedback for a class he wasn’t even teaching. Besides keeping me company in the lab at night, Dr. Shinkle came in at 4:00 AM when I ran a time course of plant tissue absorbance so that I could get a full night’s sleep. He babysat my beta fish over Christmas break, gave me pointers when I learned to drive a stick-shift, schlepped a mini-fridge up four flights of stairs so that I could keep my lunch in the lab, and even bought a floor-to-ceiling glass cabinet because he “knew how much I liked organized glassware.” For my first semester of research with Dr. Shinkle, I fixated on the things he *said*, the quotable, citable *words* as opposed to what he *did*. In this way, Dr. Shinkle taught me my first real science lesson—watch more carefully.

That summer, I behaved like a true scientist. I drove a 1996 black stick-shift Honda Civic with a bike rack to various abandoned properties throughout Texas. I good naturedly scaled fences, dodged guard dogs, traversed rocky quarries, and picked stickers out of my socks, all to sit in the one-hundred degree heat with sweat pooling on my lower eye-lashes and measure the amount of UV in the ozone that day. When I returned to the lab

after a day in the field, I could usually find Dr. Shinkle blaring big band jazz with the coffee pot in full burble. And that summer was satisfying. With no grade looming overhead or need to slink into lectures with my tail between my legs, I could start to see how people liked science. Research clicked together. Sure, I wasn't designing an experimental "Primate Model of Parkinson's" like the lab next door or engineering a wonder bra to detect breast cancer—in lieu of annual mammograms—like the guys living a floor below me, but I understood exactly what I was doing. That summer, I started to feel the calm belonging that smiles through the blinds at you on early mornings and says, "You know where you're going." And with my fledging sense of being where I needed to be came an even more hesitant feeling: pride.

My parents seemed wary of this new emotion. As if I were dating a backwards cap-wearing motorcycle mechanic, their tones were colored with a hue of "just be careful..." anytime I found conclusive evidence or a new sense of self. Unlike most parents, they did not box my ear into medicine. In fact, they were admittedly careful about appearing overzealous regarding any particular career path because they didn't want to influence my decision too heavily. This "playing coy" was terribly inconvenient when I asked them to just tell me what to do with my life but was far less embarrassing than the parents who ask the probing, "What are *you* doing this summer" questions. In their way, I know they were proud, but they were rightfully wary of the storm cloud of daunting classes that they saw looming in my sunny midst.

The culmination of my six-month research was a poster presentation in front of not only all my fellow research peers but also every science professor at the University. The day of the presentation, I tacked my glossy poster onto the corkboard with jittering, over-caffeinated fingers. Dr. Shinkle grilled me with potential questions like a football coach leading a power huddle

before the big game. Eyes locked in fierce determination, I fired back answers like a Jeopardy contestant.

For the rest of the conference, Dr. Shinkle nervously patrolled a twenty-foot radius trying to engage casually with other presenters while supervising me out of the corner of his eye. Sometimes, he would bring me a cookie or a third glass of ice water from the refreshment table as an excuse to make sure that my vital signs were still stable.

Wielding my Venti coffee cup in my right hand, I successfully fielded questions from my peers and polite parents. Then, after twenty minutes of warm-up, I caught the attention of a biology professor. Like a gazelle meeting the stealthy gaze of a lion across the open savannah, I knew there was no escape.

Dr. King took one look at my lime green dress and quipped, “Were you trying to match your cucumbers in that dress?”

I laughed nervously, knowing this was just the small talk before the big trial. As the inquisition began, I rattled off experimental procedures, unconventional methods, unexpected results, and major findings with the rhythm of a Shakespearian sonnet. Then came the big question, “It is my understanding that the nitric oxide signaling pathway has not been well-researched. What is your hypothesis for the interference of LNNA in this signaling pathway?”

At the mention of a signaling pathway I felt my spinal disks fusing. Then I reminded myself, “Don’t think about this like a scientist—think about this like you.” “I imagine it looks something like this,” I said. I grabbed my coffee napkin off the window sill and, with the professor watching over my shoulder, sketched out a Pac-Man like design of the nitric oxide signaling pathway against the wall next to my poster. When I handed the professor my napkin sketch, he looked it over and said, with a

pleasantly surprised eyebrow-raise, “Well done Miss Roth. I look forward to seeing you in my class in the future.”

With my chest puffed out like a swan duckling that finally shed its downy feathers, I glanced across the convention to where Dr. Shinkle looked on with smug approval.

I will not bore you with a catalog of the science courses I had to take at Trinity University; suffice it to say that they were hard. When I say hard, I don’t mean a satisfying challenge like climbing a Fourteener. I mean I wrote paragraphs where I should have drawn diagrams. I saw test scores better suited for a Walmart super savings deal than a letter grade. I wondered what the professor thought about my personal investment in their course as conveyed by my wardrobe and facial expressions, rather than the material on the lecture slide. I compared myself to the effortless, scruffy blond, baggy-t-shirt-and-cargo-short-wearing boys who studied for two hours and aced the midterm. By mid-semester, I had typically excavated a deep cavernous pit to claw my way out of. I was a pureed pulp of self-doubt and inadequacy, but, as Dr. Shinkle would say, “like a cross between a terrier and a politician,” I “didn’t let it go.”

On one such day, after two rock-bottom test grades, I dragged my quivering lower lip into Dr. Shinkle’s office, red binder clasped to my chest like an emergency floatation device. With my most resilient tone, I sputtered, “I swear I’m not a failure. I don’t want my professor to think that I am out late in some skanky club blowing off studying and showing up to his test hung-over. Grades like this are thoroughly disrespectful. I don’t mean to be disrespectful! I want to go to office hours to apologize for my ineptitude and misunderstanding so that he knows that my poor performance is by no means a reflection of his teaching capabilities. I don’t want him to take this personally. And I...” Dr. Shinkle, over-stimulated by this irrational emotional montage, stood bolt upright and shot his left arm out to the side. I briefly



considered the gesture, categorized it as a hug, and positioned myself so he could reassuringly pat my shoulder with minimal physical contact. As my stiff upper lip dissolved, Dr. Shinkle said, "You have one active imagination." I sniffled apologetically, and he continued, "If that professor thinks any of those things, I know you'll prove him wrong just like everyone else."