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Wisdom | Leadership | Service

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EXECUTIVE COMMITTEE 2022 - 2023

Officers

Executive Director: Dr. Claudia Kovach, Neumann University, School of Social Sciences, Humanities, and Education, One Neumann Drive, Aston, PA 19014-1298, (610) 558-5573, FAX: (610) 361-5314, Email: ckovach@neumann.edu

President: Dr. Valerie Wright, St. Leo University, 33701 State Road 52, Saint Leo, FL 33574, (352) 588-8906, Email: Valerie.wright@saintleo.edu

Vice President: Dr. Luigi Bradizza, Salve Regina University, 100 Ochre Point Avenue, Newport, RI 02840, (401) 341-3213, Email: luigi.bradizza@salve.edu

Chaplain: Rev. Dr. Anthony Grasso, C.S.C., King's College, Wilkes-Barre, PA 18711, (570) 208-5900, FAX: (570) 208-5988, Email: anthonygrasso@kings.edu

Members

Dr. Shelly McCallum-Ferguson, St. Mary's University of Minnesota, Winona, MN, (507) 457-7279, Email: smccallu@smumn.edu

Dr. Mary Ann Miller, Caldwell University, Caldwell, NJ, (973) 618 3454, Email mmiller@caldwell.edu

Dr. Jonnie Guerra, Member-At-Large, West Lafayette, IN, Email jguerrajnn@aol.com

Editors

Editor: Dr. Robert Magliola, National Taiwan University (Taiwan) and Assumption University (Thailand), retired; 411 Tenth St., Union City, NJ 07087-4113, (917) 572-0168, Email: magliola.robert@gmail.com

Co-Editor: Dr. Claudia Kovach, Neumann University, Aston, PA 19014, (610) 558-5573, FAX: (610) 361-5314, Email: ckovach@neumann.edu

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Email: DESNational@neumann.edu .

The Delta Epsilon Sigma Journal accepts submissions from non-members as well as members of Delta Epsilon Sigma. While student contributions are welcome at any time, each spring issue will reserve space for the Delta Epsilon Sigma Undergraduate Writing Contest winners. We will consider for publication a wide variety of articles, fiction, and poetry. Our primary mission is to serve the Catholic cultural and intellectual tradition, and we favor work commensurate with that aim. Submissions to Delta Epsilon Sigma Journal are peer reviewed by doctorally-prepared academics or other specialists. Submissions published in the Delta Epsilon Sigma Journal may not be afterwards published elsewhere without the express consent in writing of both the Executive Director and the Journal's editor.

Submit manuscripts (as Microsoft Word files) via email to either of the two editors: Dr. Robert Magliola (magliola.robert@gmail.com) or Dr. Claudia Marie Kovach (ckovach@neumann.edu).

Indexed in Ulrich's International Periodicals Directory and Columbia University Libraries' web archive of freely-accessible e-journals.

MESSAGES FROM THE EDITORS AND EXECUTIVE COMMITTEE

The Executive Committee announces the year 2022 winners of the Father Edward Fitzgerald Undergraduate Competition in Creative and Scholarly Writing. Please see the full list of winners in the pertaining section of the Announcements at the rear of this issue. [The winners of the other DES Awards are likewise listed in their pertaining locations in the Announcements.] The Delta Epsilon Sigma Executive Committee, at its meeting on January 4th, 2023, mandated that the following winning papers be published in the *Delta Epsilon Sigma Journal*: in the category of Poetry, the two winning entries (in a tie for first place); in Short Fiction, the first place winning entry; in Creative Nonfiction/Personal Essay, both the first place and second place winning entries; in Scholarly Research, both the first and second place winning entries. First place winning entries appear in this Spring 2023 issue; those second place winning papers designated for publication shall appear in the Fall 2023 issue.

Submissions for the forthcoming 2023 Undergraduate Writing Competition in Scholarly and Creative Writing are due on or before Dec. 1st, 2023. Chapter advisors are encouraged to organize their own local contests. *Before sending the winning entries on to the national competition, advisors must require the student-authors to correct all grammatical and mechanical (spelling, punctuation) errors in their submission.* Please note that the Executive Board must receive all submissions in Word format (no PDFs) and that submissions are limited to 5000 words maximum. *Submissions that exceed 5000 words shall not be considered.* Use the format of in-text citation and Works Cited. **All Notes should be relegated to the submission's back matter as Endnotes (NO Footnotes).** Submissions may not contain copyrighted images unless these have been cleared by the copyright holder. For further specifications, see the pertaining section of the Announcements at the rear of this issue.

The Delta Epsilon Sigma website—www.deltaepsilonsigma.org—invites *your active participation*. The site features information about the Society and *its constituent chapters*. It supplies the latest news, **current and past issues of the *DES Journal***, instructions, and application forms for the various contests, awards, etc.

All published work in the *DES Journal* is peer-reviewed by doctorally-prepared academics or recognized specialists in the work's subject-matter.

We continue to seek updated postal and email addresses of our membership. Please notify Ronald L. Smorada, Ph.D., Assistant to the Executive Director, DES National Office, Neumann University, Arts and Sciences, BACH 305, Aston, PA 19014-1298.

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100 PROOF

BRANDI NAPRAVA *

He's slack jawed, all loose limbs
and tongue while you pour
liquid fire down your throat.
Some humid thing hangs in the air,
I watch the fireworks dancing in his eyes,
he watches you swallow the flames.

He says something he shouldn't,
you circle him like an asteroid
orbits a planet. You'll fall,
and he'll swallow you up
and be consumed by you.
You burn either way.

It's the Fourth of July and
I think you're both beautiful.
Imagine myself palm to bloody
palm with him and you.
Imagine myself, helpless witness,
marveling at the dust.



* Brandi Naprava, a student at King's College, tied for first place in the Poetry Category of the 2022 Father Edward Fitzgerald Undergraduate Competition in Creative and Scholarly Writing.

YOU ARE HOME

SOPHIA HEY*

You are
alone
in the brisk air.
It slaps your face with a heavy hand,
and for a
moment,
you stop in your tracks.
You've created deep footprints
in the wet white crystals
with thin brown boots
veiled in cold water,
inside and out.
They do not keep heat.
And you walk to a shelter
That does not allow you in.
You ask a stranger for the time,
and this is not given.
With a
small, short sheer jacket
that does not fit,
you run in a circle.
Circle
after
circle
until you choose to make a
snow angel
in a frozen tundra.
You close your eyes,
Jack frost biting your nose,

* Sophia Hey, a student at Cardinal Stritch University, tied for first place in the Poetry Category of the 2022 Father Edward Fitzgerald Undergraduate Competition in Creative and Scholarly Writing.

and you breathe what feels like your
last
breath.
And you whisper to yourself,
“There’s no place like home.”
And when you open your eyes,
you are next to me
in the warmth of a kitchen.
You don’t remember how you got here,
you don’t remember how this home is now yours.
You forget the
punching, punishing
air.
You forget being lost,
circle
after
circle.
All you know now is me,
and we laugh as we bake turtle bread
in the midst
of a beautiful winter.



OF SUMMER AND SALT TEARS

CLAIRE DOLL*

The day Lain disappeared, memories of her came back to me in flashes, the way a life rewinds before a death.

But I only remembered the good. Her blonde hair, the kind that glistened, and her unblemished, perfect skin. Her eyes—a grayish blue, like the sky moments before a storm. Our fifth-grade sleepovers and cookie-baking parties and trips to coffee shops. Passing notes in class and spending our June birthdays at the pool. Talking about boys and our dreams and everything in between. The images spilled everywhere, the good covering the bad, and suddenly—

—I’m fourteen again.

We were sitting on my back porch swing, watching the afternoon sky float above us. Lain’s blonde hair was pulled up into a ponytail, strands falling lightly behind her ears. September had just arrived, and it was still summer, despite the changing leaves and crisp air. I imagined that the clouds were different worlds, drifting in the sky slowly, suspended above us.

“High school is going to be so fun,” said Lain.

I nodded. “Yeah.” We had just finished our first full week. Except, I was terrified. High school meant more students and crowded hallways. Although Lain and I had met in the third grade, I was scared I would lose her. She was always more popular than me.

“Lain?” I said.

She turned to me. Lain was wearing makeup, a light blanket of rosy blush across her cheeks, and mascara like artwork against her blue-gray eyes. “Yeah?”

“You’re my best friend.”

“I know,” she said, laughing. “You’re mine too.”

“Okay, good.” I smiled and looked at the sky, and the clouds had drifted far beyond us, getting lost behind the trees. The sliding glass door then opened, and my mom came out, smiling, holding a plate of fresh-baked cookies, perhaps to celebrate that we made it to Friday. Chocolate chip. I could smell the warmth.

Lain’s eyes widened, and we exchanged excited looks between each other and the cookies.

We devoured them.

Lain and I turned fifteen in June, and summer was spread out in front of us like a bright morning sky. Never-ending sunlight, and no clouds in sight. Something about the world felt so promising in June, and now that we were fifteen, anything was possible.

Lain and I sat at the pool deck. Freshman year of high school had come and gone, and

* Claire Doll, a student at Mount St. Mary’s University, won first place in the Short Fiction Category of the 2022 Father Edward Fitzgerald Undergraduate Competition in Creative and Scholarly Writing.

we were talking about boys. Varsity soccer team boys.

“Henry Adams is so cute,” she said. “Like, so cute.”

“He’ll be a senior next year,” I said, scoffing. But he was cute. Tall and muscular with the kind of smile that took up his entire face, causing all sorts of dimples to appear. “Have you talked to him?”

Lain shook her head. “He’s too good-looking for me.”

“Absolutely not,” I said. “You’re gorgeous.”

Smiling to herself, Lain twirled a piece of her blonde hair, letting it coil around her finger. Then, in a whisper: “I need to lose some weight, first.”

And there it was, that sentence, the kind of sentence you thought too little about and then let it wither away from your mind. The kind of sentence that, once you spoke it, it stayed with you, tattooed on your skin so you never forgot. I need to lose some weight, first. It was small and meaningless, but that’s how it was all started, anyway—by a small and meaningless comment whispered on the pool deck on an anything-is-possible June afternoon.

Summer stretched on for months, and soon, autumn had arrived rapidly, bringing a whirl of cold air and falling leaves like drizzling rain. We were fifteen, still, but a different kind of fifteen. Sophomores. Lain had finally built up the courage to talk to Henry the soccer player, and she spent the summer going on late-night drives with him, curled up on the sofa on his basement watching old movies. That’s what she had told me, anyway. My summer was a blur of working at the library and writing and reading in the sun, and I hadn’t seen Lain much.

But then the heartbreak happened.

“He said he didn’t love me anymore,” Lain said in breathless sobs on a rainy October morning in the school bathroom. “That he needed to focus on his soccer and college applications. That it was just a summer thing.” Her voice broke at the last sentence.

I didn’t know much about heartbreak or anything of that matter. “I’m so sorry,” I said, repeating myself over and over, but knowing that words were just words. Transparent and quick to fade.

The rain outside became a rhythm beating on the windows. Something we could hang onto, in between gasping cries and the sounds of stall doors closing.

The next day, I brought cookies to school. Chocolate chip, with sea salt sprinkled on top.

“Hey,” I said, walking up to Lain’s locker. I smiled and handed her a cookie. “These should help.”

She nodded and took the cookie and held it in her hand, watching it, then sighing. “Thank you,” she said, her breath wispy. “But I’m okay.”

And then she didn’t come to school some days. The times she did, Lain wore a thick black sweatshirt and baggy jeans. Or sweatpants. She didn’t paint her face in makeup like

she used to, and she moved slowly, almost emptily, through the hallways, like a ghost. The old Lain, before summer, would have spent these fall-almost-winter afternoons walking to our favorite cafe to buy overpriced lattes. She would have worn her favorite sundress with a cardigan and rosy, red blush.

One day in English, I tore out a piece of paper from my notebook.

Hey, how are you?

I slid it over to Lain, who was sitting two seats down. One empty desk stood in between us.

Minutes passed. Then: "I'm okay. Thanks." Black ink, scrawled, barely legible.

I decided not to pass anymore notes, but at the end of class, I caught a glimpse of Lain, of my best friend since third grade, of the girl who had completely distanced herself from the world and from me.

It wasn't her.

It was Lain, yes, but different. The ghost of Lain. Hollowed cheekbones that swallowed her entire face, and pale skin, almost like porcelain. Bones exposed like a secret, clothed by the baggy "Lake Eerie" sweatshirt. Her blonde hair, not quite as full and thick, but glistening like morning sunlight. And her eyes, still a dusk blue.

Eyes always stayed the same.

I knew in that moment I should have said something. "Hey, Lain, are you okay? We haven't talked much, let's catch up." But for some reason—maybe it was the ringing of the lunch bell or the groups of students walking around us or the fact that Lain had wanted so badly to leave—I didn't.

And like a ghost, she disappeared, as if fading into thin air.

I remembered the week she didn't come to school. The entire week, five days, without seeing Lain.

I remembered the phone call that Sunday night.

I remembered the words, how shaky her voice was, but I remembered the mere fact that I could hear her, the best friend I had known since third grade, if only through a staticky phone call.

"I'm sick," she told me. She spoke quietly, almost ashamed. I had never heard Lain ashamed. She was beautiful and confident and afraid of nothing, not boys, not the grams of sugar in a cookie. "I have anorexia."

My heart slipped from my body, fell to the floor. Anorexia. I remembered hearing about that in health class, where you stopped eating to look skinny. Your hair would fall out, you'd become thin and pale, eyes like sunken holes in your face.

Lain had become that. Her fine blonde hair, the outline of her bones pressed against her skin, the way she never ate. Ever. Her beautifully beating heart, trapped in an eternally starved body. A body she didn't want. A body that had become invisible to her, to the world. A fifteen, almost sixteen-year-old, teetering on the edge of death.

I immediately felt tears sting my eyes. Sniffing, I dug my fingernails into the palm of

my hand. "Lain, God, I am so sorry."

But in her voice, as she replied, I heard her smile. Just barely. She spoke lightly, unlike how she ever spoke before. "It's okay. I-I want you to visit me. Maybe tomorrow, after school?"

My head was spinning. Outside, the sun had set, revealing just a sliver of light sparkling above the horizon—the afterglow—colored golden and orange. I felt the beating pulse of my heart through my ribcage, and suddenly, it felt impossible to swallow, to breathe, to talk.

"Yes," I said, finally. "I would really love that."

I had picked carnations from the backyard for Lain because I didn't know what else to get her. On the way to the hospital, Mom kept telling me that they were beautiful. "She'll love them," she had said, smiling to herself. Each flower was tinged light rose, the petals bunched up like clouds on a summer's day. It was spring, April, and the sky was a faint blue. Perfect and bright.

But when I arrived in the lobby, the assistant nurse eyed the vase I was holding. "Elaina can't have them in her room."

"Why?" I asked, the word blurring out of my mouth before I could even stop myself from saying it.

She pressed her lips together, voice monotone. "Anything with glass or water poses a threat to Elaina. I understand you intend no harm, but we don't want any healing patients to be endangered."

So the carnations could hurt her.

I imagined Lain taking the vase of flowers and carefully cracking the glass, cradling a shard in her hand and piercing her veins. I imagined blood, bright and crimson, spilling from her body and onto the pale surface of her skin, like paint to a canvas. I imagined the handpicked carnations wilting away, petal after petal curling towards the ceiling of her dark, colorless room.

That wasn't Lain.

Was it?

The assistant cleared her throat, then gently smiled. "But we could put them in the lobby, behind the glass shield."

I looked over at the desk where multiple doctors wearing lab coats sat, their heads pointed down at their clipboards. In defeat, I nodded and handed the assistant my vase. Lain's vase. She walked to the other side of the door and set the vase on the counter, a glare of fluorescent lighting painting a streak across the carnations.

Then, we were led to her room. The nurse knocked twice, and the door opened.

The first thing I saw was her smile. "Hey," said Lain.

My skin grew goosebumps at the sound of her voice. It was light and frail and quiet. Once I processed that, I took in the rest of Lain: golden hair, hanging lifeless around her shoulders. Her shoulders, bony and sharp, poking out of her fitted white T-shirt. Her shirt,

perfectly shaping her skinny body, and her body, small and frigid, every joint distinct and hollowed.

Had she always looked like that?

In every memory, Lain was perfect. Beautiful, with blue eyes and blonde hair, always breathing in the summer or autumn or winter or spring air and exhaling laughter. In every memory, she smiled and talked about her dreams. In every memory, she was my best friend.

And then at the same time, in every memory, she was a ghost.

“Hi,” I said. “I’m so sorry, Lain. Are you okay?”

She smiled, slightly. “Yeah, I’m okay.”

We had much to talk about and lots to cry over, but in that moment, it didn’t matter.

“I love you Lain,” I said, feeling tears tug at my eyes. “Please, don’t disappear again?”

As we hugged, she nodded, and I felt the sharpness of her shoulders, the bony structure of her body. She smelled of summer and salt tears, of home, and I breathed it in. Every bit of it.



SOLDIER SISTERS

CALASANDRA SPRAY*

Fingers pull at the roots of my hair as I claw savagely at her wrists. My toes dig into the grimy gray carpet, matted from trying to clean up dog pee with baking soda. Rug burn scorches into my back where my t-shirt has been pulled up by the force of being dragged across the carpet. I clench my jaw, teeth grinding together. I won't make a noise. I won't let her know I'm in pain. I won't let her force me out of her life. I force her to fight me for every inch closer to the door. She's screaming at me. I don't hear the words. The entirety of her face is crimson and tears stream down her cheeks. Good.

Invigorated by Sammy's anger, I dig in deeper, throwing my body weight against her open closet. A year older, she is bigger and stronger than I am. Luckily, I inherited my mother's stubbornness. My temples throb as she shrieks and yanks at my hair. Is this what it feels like to be scalped? I take a deep breath and hook my knee into the open door frame. She's gained another inch but I've gained two extra minutes in her room. I think I'm winning.

Mom is hollering from the stairs, inquiring what all the fuss is about. Heavy footfalls cause the old stairs to creak and moan. Time is running short. I give up, letting all of my muscles go limp. The last foot to the door goes swiftly as my sister hauls me out of her room, depositing me in a heap outside. Thud. The door slams into place. My mother has reached the top of the stairs and I smirk cheekily at her.

"Leave your sister alone," she reprimands. Nudging me with her foot, Mom prompts me to scramble out of her way. Her small fist knocks against Sammy's door. Groans echo from within. Mother gives me a look that says I don't need to be present while she questions my sister.

I push myself up and limp to my own room. It's not like I need to be anywhere near to understand the screaming match that takes place between the two. Mother tells Sammy that she can't take her anger out on me. Sammy says that I provoked her. I did. Mother doesn't believe her. They argue about appropriate methods of grief. Mother storms out of Sammy's room in a fury. Sammy slams her door shut; the lock clicks.

Angsty music blares, screaming something about the injustice of being a teenager. It must be hard to be thirteen—sometimes I wonder if I would be grieving in a similar manner if I had teenage hormones running rampant in me. I tiptoe back to her door, sidestepping any floorboards that I know are creaky. With a sigh, I slide down the wall to the floor. Leaning my ear against our adjoining wall, I can hear sobs from within. Tears leak down my own cheeks as I probe newly inflicted bruises, and burns. I have won this battle: if Sammy's busy being furious with me, then she won't hurt herself. She won't leave me.

"I can't lose you," I whisper to oblivious ears.

* Calasandra Spray, a student at Loras College, won first place in the Short Fiction Category of the 2022 Father Edward Fitzgerald Undergraduate Competition in Creative and Scholarly Writing.

* * *

Whiskey's burning odor assaults me as I open the door to Dad's apartment. Today is a bad day. Maybe he forgot that it's his week to have us. Maybe it's a bad day because he knows he's supposed to take care of us. I pivot, hoping that he is too drunk to have heard my key turn the latch and I can wait outside for Sammy to get home.

"Welcome home," he bellows. I'm caught.

A knot twists in my stomach. I take the stairs lightly, despite apprehension whispering for me to run. If I were to trudge, or show any signs of alarm, then he would get angry. I would do anything to keep him from getting angry.

When I round the living room corner I catch a glimpse of him sprawled on the couch, an arm flung over his eyes. His boots dangle, half unlaced, off his feet. A glass sits empty on the coffee table, a faint ring lining its crystalline figure about halfway up. He's had a small glass of whisky. A small glass isn't bad. Perhaps it's just a headache. I slide my backpack off my shoulders, making sure to grasp the straps as it falls to soften the plunk of it reaching the floor.

"I have a headache," he grunts.

He peeks at me from under his arm. I give an affirming nod. His arm settles back over his eyes. Making sure to walk softly, I approach him. Nimble fingers finish unlacing the clunky boots, and I slip them from his feet. He lets out a soft sigh. Safe. I've done something to please him. I walk back to the door and place his boots on the shoe mat. Removing my own shoes, I deposit them beside his.

"Could you get me water?" he calls. Like a ghost, my body moves on its own: reaching for a glass in the cupboard, flicking the spout in the sink on, dropping ice cubes into the glass, floating back to the living room. It's always a good day when he asks instead of demands. Perhaps the liquor has him in good humor.

Footfalls announce my sister ascending the stairs. Her steps are not as quiet as mine and Dad grumbles. I drift to the windows and draw the blinds closed. When Sammy enters the living room she drops her bag next to mine. Thwack. His hand hits the coffee table, rattling the ice in the glass.

"Do you mind?" he snaps.

Noticing her error, Sammy immediately arches her feet to walk on tiptoe.

"Sorry," she mumbles.

I look at her and our eyes meet. Brown orbs gaze at me with sympathy. "I'm sorry I'm late" she mouths at me. I shrug. My stomach grumbles. Unspoken, we drift to the kitchen. Dishes are heaped on the counter beside the sink, an unknown food crusts the stove, and there's something sticky on the floor. Sammy starts to fill the sink with sudsy water and I crack the fridge door. Dad hasn't gone grocery shopping. I text Mom; she replies that she'll drop off groceries later that evening.

Dad's frame lumbers into the doorway. His hair sticks out in spikes like he's been

tugging at it. Yellow teeth peep at me from cracked lips as he gives a sheepish chortle.

“Guess I haven’t cleaned in a while,” he says.

“That’s all right,” Sammy chirps.

He notices my silhouette in the soft glow of the fridge. Reaching into his back pocket, he pulls a ten dollar bill from his wallet.

“Why don’t you run down to Fareway and pick up something for supper?” he says as he hands the cash to me.

My head bobs.

“And grab me a pack of cigarettes,” he finishes. His easy gait and boyish smile unclench the knots somersaulting in my stomach. He is on his best behavior.

“I can’t,” I chime. My lips crinkle, trying to soften the statement.

A shadow passes across his eyes and lines mar his brow. Fingers wrap around my bicep, and I’m yanked closer to him.

“Ten dollars is plenty for dinner and cigarettes,” he simpers. I’m not convinced of his amiable disposition the way his smile and tone would suggest. Perhaps it works better on adult women because they find his wavy blond hair and sharp cheekbones attractive. My throat constricts as if his fingers clenched my trachea rather than my arm.

Sammy lays a soothing hand on his forearm, gently guiding it away from my bicep. “Dad, she’s underage.” My shield.

Silver-blue eyes scan my childish features. He nods.

“I forgot,” he mumbles. Prodding my back, Sammy urges me to the door.

“Dinner and a soda then,” Dad states as I slip my shoes back on.

I hear Sammy talking to Dad and he laughs gaily at something she’s said. She’ll be fine while I’m gone. The crisp air outside lets me take the first deep breath in an hour. Fareway is four blocks from the apartment. Vigorously pumping my bike pedals, I arrive in less than two minutes.

I take my time wandering the aisles, hoping Dad won’t notice I took longer than necessary at the store. What can Sammy cook? Hamburger helper? That would require talking to the burly man at the meat counter. Frozen lasagna? It wouldn’t leave any change for a soda. Spaghettios? Gross. I finally decide on Mac-N-Cheese. Grabbing two boxes from the shelf, I bounce to the dairy section. Sammy always adds a bit of milk to make it extra creamy. Plus I prefer milk over water, and if it’s needed for dinner then I can buy it without getting in trouble. Plodding to the front counter, I grab a Mt. Dew from the cold drinks section. Milk was on sale and the cashier hands me four dollars and change. Pleased, I grab a pack of EXTRA spearmint gum from the shelf. The same cashier rings me up. Gum is one of the few of his vices that at ten years old I’m able to purchase.

Sammy and Dad are still in the kitchen when I get home. Dishes have been washed and stacked on a towel, the stove is shiny, and whatever was stuck to the floor has been cleaned up. Water is boiling on the stove. Sammy is sitting in Dad’s lap while he tickles her sides and she giggles. He doesn’t notice that I’ve returned until Sammy looks at me. I pull the half-gallon of milk, Mac-N-Cheese, soda, and gum from the grocery bag. Dad’s eyes light up when he sees the gum.

Walking over to the counter, he holds his hand out for the change. I proudly place the two dollars and change into his palm.

“Milk was on sale,” I announce.

“How about a tip for my delivery girl,” he says ruffling my hair. I nod, beaming.

“If something’s on sale, keep the change and don’t announce it.” His smirk lets me know that he’s only half teasing. He pulls a quarter from the change and slips it into my back pocket, his fingers lingering on my butt.

Sammy moves to stand between us, and nudges me aside. “Why don’t you go do your homework while I cook dinner,” she tells me. Eagerly, I scamper away and climb the ladder to the top bunk with my backpack. I pull an issue of *The Magic Treehouse* from the largest pouch and recline into my pillows. Losing myself in a fictional adventure, I don’t realize any time has passed until Sammy calls me to dinner.

Dad heaps the noodles onto his plate, leaving half a box for Sammy and me. We share what’s left and each drink a large glass of milk to fill us up the rest of the way.

“I’m going to my girlfriend’s,” Dad announces when he’s finished eating.

Neither of us says anything as he pulls on his jacket and shoes. “I love you,” I call as he heads out the door. He doesn’t respond. I briefly wonder whether it would be better for him to come back tonight or not.

“I hope he stays out,” I tell Sammy.

She guides me to the bedroom and rubs my back as I cry into her chest.

“I hate him,” I sob.

“No you don’t,” she coos. “He’s our Dad, we can’t help but love him.”

* * *

The speaker crackles as it announces to the whole class that I’m needed in the Principal’s office. I hop off my seat and run down the hallway. Perhaps I’ll get to see Dad today. We have been at Mother’s for three weeks while Dad works out something with the law. Three weeks is an eternity to an eleven-year-old. We’ve been told that Sammy and I can have a supervised visit soon. I don’t bother to wonder why our visit would be in the middle of the school day.

When I enter the main office, I see Mom and Roger, her boyfriend, sitting in the chairs. Mom pats the seat next to her and I oblige. Her face is wary and dark circles blemish her under eyes. A minute later Sammy walks into the office and the four of us pile into our family car. The drive home is swift and no one talks. When we arrive, Sammy and I are guided to the living room couch. Mother perches on the coffee table and rests one of her petite hands on either of our knees.

“We got some news about your dad today,” she begins. Sammy and I both perk up. “He’s committed suicide.” My ears buzz as words continue to flow from her lips; I don’t hear them. Tears leak down my cheeks and I vaguely register being carried to bed and having my stuffed animals tucked in around me.

Shouts ensue from downstairs. Sammy doesn't believe Mom. She accuses her of lying, of selfishness, of wanting us all to herself, but Sammy is Daddy's girl and he wouldn't abandon her. Didn't he already abandon us every time he chose alcohol over us or an evening with random women over us or spent money on drugs rather than groceries? The weight of sadness lulls me into a comatose sleep.

When I wake up, I hear Mom and Roger whispering outside of Sammy's door. I gather that after hours of arguing she has finally worn down and fallen asleep.

"I'm worried about what she'll do," Mom whispers. She frets about the effects of having shared custody, the damages of losing a father at such a young age, and what life was like when we were at Dad's and had no one to protect us from his vices. Except, Sammy protected me.

"We'll watch her closely," Roger replies.

"She's already depressed," Mother says. "She always followed him. What if she follows his example this time?"

I resolve that I'll watch her closely, too. It's my turn to protect her.



ADMINISTRATION OF NERVE GROWTH FACTOR TO ENHANCE REGENERATIVE GROWTH

MEGHAN KODSI*

ABSTRACT: As neurodegenerative diseases continue to impact the lives of millions of Americans, researchers have evidence to believe that the degeneration of cholinergic neurons containing a neurotrophic factor known as nerve growth factor (NGF) contributes to these diseases. NGF presents the challenge of not crossing the blood-brain barrier, making it difficult to analyze its effects on the nervous system. Several animal models have been used to successfully find that treatment with NGF significantly lessens traits resembling Alzheimer's Disease. One animal model, planaria, possesses valuable regenerative capabilities. Drugs such as caffeine have been tested on planaria to measure their regeneration rate, with the finding that it does accelerate regeneration. In this experiment, regeneration in planaria was measured upon administration of NGF. An initial baseline measurement was performed on each planarium in this experiment ($N = 10$). Each planarium was severed directly beneath the pharynx and placed in its respective treatment—control or NGF. Each extremity was measured in millimeters for one week. This study found that NGF killed all planaria treated with it after one week, implying that NGF exhibited toxic effects on planaria. Future direction should be taken to analyze if the specific concentration used in this experiment was too high or if NGF exhibits toxic effects on planaria, regardless of concentration.

Keywords: planaria, nerve growth factor, regeneration, Alzheimer's Disease

Neurological disorders affect millions of Americans yearly, including those suffering from neurodegenerative disorders, where brain function gradually decreases. Neurodegenerative diseases result from the brain and spinal cord cells deteriorating, causing a loss of motor skills, sensory skills, paralysis, and more. The most prevalent neurodegenerative diseases affecting Americans today include Alzheimer's, Parkinson's, multiple sclerosis, amyotrophic lateral sclerosis, and Huntington's. Over five million Americans have Alzheimer's disease, and one million have Parkinson's (Harvard Neurodiscovery Center, 2011). One of the reasons there is such a high prevalence rate in these diseases is because of challenges with treatment. These diseases are often diagnosed once they progress too far. Even if diagnosed early on, current drugs that target this problem do not cross the blood-brain barrier, making them ineffective.

Many hypothesize that a decline in the production of a neurotrophic factor known as nerve growth factor (NGF) may be a factor underlying these neurodegenerative problems. NGF promotes the growth and survival of nerve cells, particularly the ones important for pain, temperature, and touch. A remarkable discovery in the 1980s brought neurobiologists to understand that NGF impacted the nervous system outside the brain

* Meghan Kodsi, a student at Mount St. Mary's University, won first place in the Scholarly Research Category of the 2022 Father Edward Fitzgerald Undergraduate Competition in Creative and Scholarly Writing.

(Marx, 1990). It was found that cholinergic neurons contain NGF receptors and respond to NGF during their entire lifetime. This finding gave neurobiologists the knowledge that NGF existed in the body beyond the realm of the brain. Further studies have found that NGF plays a crucial role in regulating and differentiating peripheral and central nervous system neurons, especially in basal forebrain cholinergic neurons (BFCN) (Fahnestock et al., 2001). These neurons degenerate in patients who have Alzheimer's disease, which is why many believe that lack of NGF contributes to neurodegenerative diseases such as these.

Alzheimer's disease is a complex disorder, often attributed to a buildup of plaques, neurofibrillary tangles, and neuronal loss. Many scientists believe underlying factors that may influence this disease are pathological processes and intracellular signaling (Takeda, 2011). The discovery that NGF influenced cholinergic neurons—neurons responsible for movement and other bodily functions—has led to many new proposed treatments for Alzheimer's disease. Olson's study (1993) found a relationship between NGF and cholinergic neurons in animal models. The information gathered in the experiment was used to discuss potential treatments that would be plausible in humans. NGF appears necessary for maintaining cholinergic systems since cholinergic neurons can move NGF retrogradely, and when severed, NGF can restore these cholinergic neurons. One limitation to the administration of NGF in treating neurodegenerative disease is that NGF is too large a molecule to pass the blood-brain barrier. Olsen suggested the possibility of using intracerebral NGF infusion. This method would deliver NGF directly into the central nervous system, specifically in the cerebrospinal fluid or brain parenchyma. Other proposed methods discussed include coupling NGF with a carrier to help it cross the brain, transplanting cells capable of NGF synthesis to intracerebral sites, directly transferring the gene to the brain, or developing an NGF receptor agonist. These ideas possess great potential; however, experiments that carry high risks must be tested on animals before being used in human studies.

Other researchers have also noted the challenge of treating these diseases because of the inability of NGF to cross the blood-brain barrier. Several strategies have been proposed to deliver NGF to counteract neurodegeneration. However, all of them are associated with deleterious secondary or insufficient effects (Lindvall et al., 2004). Significant drawbacks are the risk of tumorigenesis, insufficient cell survival in cell therapy, or invasiveness of some delivery systems, as well as the lack of control over the production and delivery of the neurotrophin because too high levels can be neurotoxic (Martínez-Serrano & Björklund, 1996; Rubio et al., 1999; Pineda et al., 2007; Kells et al., 2008). There are many side effects and severe health problems resulting from improper administration of NGF. Scientists are experiencing many setbacks, preventing them from finding a cure for these neurodevelopmental disorders, which is why NGF is currently being analyzed in great depth.

There are still many unknowns regarding NGF and how the human body will respond when administered. Because of this, many different animal models have been used to study its effects. A study by Capsoni, et al. (2002) examined how removing

NGF in genetically modified mice would resemble characteristics of Alzheimer's disease. These Alzheimer-like symptoms can be seen in mice with a neurodegenerative phenotype. These mice, known as AD11 mice, display a neurodegenerative phenotype characterized by behavioral deficits linked to cholinergic atrophy, neuronal loss, tau hyperphosphorylation, and insolubility. Using mice to model human-like symptoms of Alzheimer's, they analyzed whether NGF treatments would benefit lessening symptoms. The NGF was administered through the olfactory system into the basal forebrain and other regions of the brain. One notable factor they found was that NGF delivered protection against the loss of basal forebrain cortical neurons, increased tau hyperphosphorylation in the cortex, and intracellular accumulation of A β in the hippocampus. These results concluded that neurodegeneration in these experimental mice is related to a lack of NGF.

Another study on mice was based on the idea that NGF is present in their saliva, allowing mice to heal their wounds when licking them (Li et al., 1980). Researchers analyzed whether topical application of a high molecular weight neuronal growth factor would enhance healing and increase the speed of the healing process. They removed the submandibular gland in one group of mice to prohibit saliva production. This group was treated with the high molecular weight NGF and compared against a control. It was found that their hypothesis was supported, and wound healing was rapidly accelerated in the treated group of mice. This study highlights the importance of NGF in the body and healing process, furthering the reasoning for why NGF is necessary and highlighting how there would be severe consequences for healing and motor or sensory functioning without it.

Animal models have proven extremely useful in neuroscience, including planaria, because the risk of ethical concerns is greatly diminished. The effects of NGF have been studied in several experiments using the animal model known as planaria. Understanding regeneration in the planaria allows insight into preventing the degeneration of NGF in humans and discovering new treatments and solutions. Planaria species are known for their regenerative capabilities (Bohr et al., 2021). The regeneration occurs when stem cells detect an injury and send a signal to restore missing cell types. The mechanisms which underlie this complex process are being studied to understand what triggers this ability (2021). Once these stem cells detect injury, differentiation begins. Genetic analysis has found that the new cells are not identical. Different stem cells have specific genes turned on that are needed to regrow certain body parts. Typical planarian studies amputate the head at the pharynx, triggering stem cells that differentiate into pharyngeal cells to become highly active. Because these stem cells can also regenerate a new head, it may imply that stem cells respond to injury in all parts of the body.

To understand how regeneration occurs in planaria, an experiment conducted by Lazorik measured the effects of caffeine on their regenerative abilities (2019). Planaria are helpful for experiments analyzing regenerative capabilities because they possess almost every neurotransmitter in mammals. This regenerative capability results from the fact that planaria have self-renewing stem cells known as neoblasts, which are sent to a

wound site to initiate regeneration. These neoblasts differentiate into blastemas, which then differentiate over a few days to replace missing body structures. One of the primary effects of Parkinson's disease is the degeneration of dopaminergic neurons. Because higher dopamine levels have been found in regenerating planaria, it was hypothesized that dopamine might contribute to this unique regeneration. To test this hypothesis, caffeine was used to stimulate dopamine signaling so that regenerative capabilities could be measured in different groups with varying amounts of dopamine. This experiment found that this regeneration was accelerated in the presence of caffeine, indicating that these pluripotent stem cells could potentially differentiate into dopaminergic neurons, which needs to be confirmed with future research. This experiment supports the idea that stem cells play a role in regenerative abilities and allows for future direction to measure other factors that might stimulate this growth and what underlies differentiation into specific neurons—such as dopaminergic neurons.

Because planaria help investigate the effect of NGF, planaria can be used as a model to give insight into cellular processes essential for neuronal survival and regeneration. Their unique regenerative ability could be a screening tool for new therapeutics for neurodegenerative disease and injury recovery (Roberts-Galbraith, et al., 2016). Based on the previous experimentation and current understanding of planaria, NGF should have significant regenerative abilities on planaria after amputation. Furthermore, because planaria lack a blood-brain barrier, NGF should be more easily administered, allowing the effects of the NGF to be more adequately measured. Based on these previous studies, it is hypothesized that the administration of NGF will accelerate stem cell regeneration in planaria.

METHODS

Subjects

10 adult brown planaria (*Dugesia tigrina*), a common freshwater representative of the phylum Platyhelminthes, were maintained on petri dishes in spring water until reaching adulthood.

Materials

Brown planaria (*Dugesia tigrina*), a common freshwater representative of the phylum Platyhelminthes, were used in this experiment. For experiments using NGF, 0.1mg/mL NGF (Sigma Aldrich) was prepared ahead of time on a petri dish. For the control, 1mL of spring water was prepared ahead of time on a petri dish. Each planarium was assigned to a treatment and transferred to the corresponding dish.

Procedure

The experiment began by preparing plates of 1mL of distilled water and 0.1mg/mL of NGF. Petri dishes were prepared with either distilled water or NGF and were labeled to identify the treatment. The size of each planarium was measured, and observations describing their length and size were also documented. After 24 hours, each planarium

was placed on a frozen microscope slide to limit its movement. Each planarium was cut with an X-Acto knife slightly below its head. The heads and tails of each planarium were transferred to their own dish. Regeneration was measured in millimeters. For this experiment, “full regeneration” was defined as each planarium head or tail reaching its original length before being severed. Details regarding the size of each planarium were recorded, as well as its length in millimeters, to track the regeneration stages. Planaria were selected to be transferred to distilled water or an NGF plate. Proceeding the cut, observations were made on days one, three, five, and seven of the experiment; details such as wound closure, elongation, or any form of growth were documented. Each planarium’s size was measured in millimeters under a microscope. After one week, the two groups were compared to one another to observe changes in size between distilled water or NGF treatments.

RESULTS

A total of 10 planaria were used to measure the effect of NGF on regeneration following the severing of each planarium directly beneath the pharynx. It was hypothesized that NGF would decrease planaria’s time to complete regeneration. Regeneration in planaria treated with NGF was analyzed and compared against a control. As seen in Figure 1, NGF had no effect on regenerating time; instead, all planaria treated with NGF were dead by day seven of the experiment. A baseline measurement was recorded in millimeters of the planaria treated with NGF after severing it directly beneath the pharynx ($M = 1.65$, $SD = 0.37$), as well as for the control ($M = 1.21$, $SD = 0.38$). No significant growth was recorded for planaria treated with NGF on day three ($M = 0.69$, $SD = 0.91$) and day five ($M = 0.1$, $SD = 0.31$). There was also unexpected death in the control, with minimal regeneration on day three ($M = 1.02$, $SD = 0.64$) and day five ($M = 0.595$, $SD = 0.67$). Additionally, most of the planaria in the control group died by day seven. While planaria in both treatments died by day seven, a more significant number of planaria had died in the NGF treatment ($M = 0$, $SD = 0$) compared to the control ($M = 0.37$, $SD = 0.6$). Planaria that had died during the experiment were given a score of “0”, represented by the lower means and standard deviations corresponding to an increase in time treated.

A multi-factor independent samples ANOVA was run to measure if NGF and time influenced each planarium’s regeneration. It was found that there was a significant, moderate effect concerning time in planaria of both groups, $F(3,54) = 22.49$, $p < 0.05$, $\eta^2 = 0.43$. There was also a statistically significant, mild interaction between the drug administered and the number of days each planarium was treated, $F(3,54) = 3.34$, $p < 0.05$, $\eta^2 = 0.015$. The significant interactions are seen in Table 1, represented by their corresponding significant Tukey values.

As seen in Table 1, Tukey’s post-hoc test revealed a significant interaction between all days in the experiment, $p < 0.05$, except for between day five and day seven. A Tukey’s post-hoc test also revealed a significant difference between NGF-treated day one with NGF-treated day three samples, NGF-treated day five, control day five, and control day

seven ($p < 0.05$). There was also a significant difference between control day one, against NGF treated day five, NGF treated day seven, and control day seven ($p < 0.05$). The final interaction was seen between control day three against NGF treated day seven ($p < 0.05$). Contrary to what was initially hypothesized, the results indicated that NGF had no significant effect on the planaria regenerating rate as both planaria treated with NGF and the control did not regenerate at all.

DISCUSSION

The widespread effects of neurodegenerative diseases continue to grow as there is still minimal knowledge pertaining to treatment for these diseases. Alzheimer's disease is a neurodegenerative disorder characterized by a buildup of plaques, neurofibrillary tangles, and neuronal loss. Additionally, those with Alzheimer's disease experience degeneration of cholinergic neurons, which contain receptors for NGF—a neurotrophic factor responsible for maintaining nerve cells. Subsequently, many neurobiologists believe that this decline in NGF plays a role in neurodegenerative diseases such as Alzheimer's. The purpose of this experiment was to use planaria—an animal model possessing unique regenerative abilities—to analyze the rate of planaria regeneration in the presence and absence of NGF. While it was hypothesized that NGF would enhance the planaria regeneration rate, this experiment's results indicated that NGF does not affect the time it takes to reach full regeneration post-severance. After seven days of treatment with NGF, the planaria had all died, indicating that the NGF was toxic to the planaria.

As the idea that NGF played a critical role in cholinergic neuronal health became more widespread, researchers began to propose several methods to test treatment options for neurodegenerative diseases such as Alzheimer's. Olson (1993) discovered that NGF played a significant role in maintaining and restoring cholinergic neurons. However, due to the large molecular size of NGF, it cannot cross the blood-brain barrier, raising the question of different treatment methods. Olson suggested several methods involving NGF infusion or transplantation of cells capable of NGF synthesis. Others, such as Capsoni et al. (2002), measured how the removal of NGF in genetically modified mice would resemble traits attributed to Alzheimer's. After detailing the effects of NGF removal, these mice were treated with NGF through the olfactory system. The findings from this indicated that NGF improved Alzheimer's-like symptoms in the mice, with the implication that a decline in NGF does affect neurodegenerative diseases such as Alzheimer's. Whereas the previous studies support the idea that neurodegenerative diseases are affected by a decline in NGF, this experiment was unsuccessful in finding an effect of the administration of NGF on the regeneration rate in planaria.

While it is unknown what specifically caused this death, one reason could be that the planaria were treated with too high a dose of NGF. A study performed by Rubio, et al. (1999) found that administration of stem cells derived from a different neurotrophin, BDNF, administered in rats, resulted in toxic effects after long term exposure. This supports the idea that the concentration of NGF used in this experiment was too high. Additionally, NGF has not previously been studied on planaria. Because of the limited knowledge of NGF and its effects on planaria, further experimentation would have to be

performed to understand the specifics underlying the death in this experiment.

The methods of the current experiment closely aligned with the methods performed in a study by Lazorik (2019); this study analyzed the effect of caffeine on the regeneration rate of planaria. Parkinson's disease is a disease marked by the degeneration of dopaminergic neurons. Lazorik wanted to measure if caffeine could stimulate dopamine signaling post-regeneration in planaria, as it had been found that planaria post-regeneration possessed higher dopamine levels compared to planaria pre-regeneration. The results of this study were that caffeine enhanced regenerative abilities in the planaria, with the implication that caffeine promoted pluripotent stem cells to differentiate into dopaminergic neurons. Similar results were expected in the current experiment; however, the planaria died and never fully regenerated. These contrasting results could be attributed to the fact that Lazorik used different concentrations of caffeine, contrasting with this experiment which used a single concentration of NGF. The results in the control were especially perplexing as a trial experiment had been run to prepare for this experiment, and all control planaria had regenerated. The successful planaria regeneration in past experiments made it even more challenging to attribute a single factor to both groups' deaths.

Limitations of the experiment include the fact that only one trial was performed, limiting the experiment's reliability. There was also a minimal sample size of 10, with only five planaria per condition. Because there is currently no published experimentation analyzing NGF on planaria, this experiment was performed blindly. When beginning this experiment, there was no baseline for what was considered a safe amount of NGF to administer to planaria. Due to limited funding, only one concentration was attempted. Additionally, the control planaria and planaria treated with NGF died by day seven. Previous experimentation had been performed on planaria using only spring water with no death on day seven. Because there was death in both the control and treated group, this could indicate contamination in the experiment. As seen in Figure 1, the death of planaria in both groups is accounted for by the large error bars representing the large standard deviations of their mean length after treatment.

While the study had many limitations, it gave insight into the fact that even though NGF is crucial for maintenance and neuronal health, it can also exhibit toxic effects. Future directions of this experiment could use a larger sample size and different concentrations of NGF to understand if the planaria dying resulted from the NGF bearing toxic effects at all concentrations or if the specific concentration used in this experiment was too high for the planaria. Suppose differing concentrations of NGF brought about successful findings. In that case, the number of days for planaria to regenerate could be compared against another drug, such as caffeine which has previously been found to enhance stem cell regeneration in planaria. Future direction could also include behavioral analysis of planaria if NGF successfully enhanced the regeneration rate. A study performed by Shomrat & Levin (2012) found that regeneration in planaria included restoration of behavioral functions linked to learning and memory. Because NGF is understood as essential for cholinergic neuron maintenance and restoration, it would be interesting to analyze how the treatment of NGF influenced behavior and memory

following regeneration.

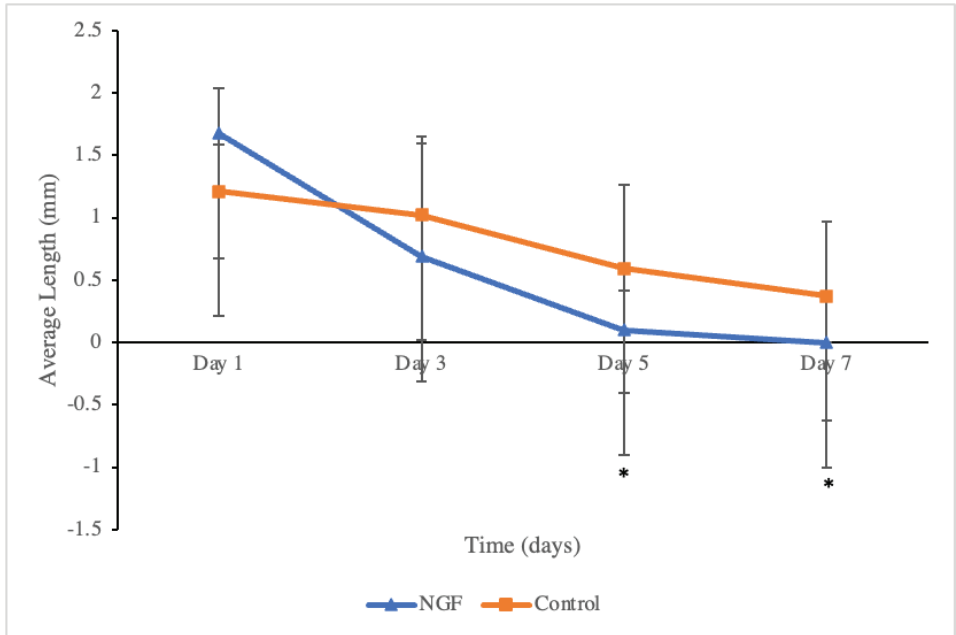
NGF's role in the nervous system is still being studied to understand its role and relationship to neurodegenerative diseases such as Alzheimer's. Neurobiologists have successfully understood the role NGF plays in regulating and differentiating neurons in both the peripheral and central nervous systems, primarily seen in basal forebrain cholinergic neurons, which have previously been found to degenerate in those who have Alzheimer's disease. In hopes of treating Alzheimer's disease, neurobiologists are currently working to find different ways to administer NGF to cross the blood-brain barrier in those lacking NGF because of degeneration or damage to cholinergic neurons. This study aimed to measure how the administration of NGF would affect regeneration in planaria after being severed below the pharynx. The results of this study did not support the hypothesis, as the planaria in both the control and treated group died by day seven of the experiment. Future experimentation could provide more insight into the cause of the planaria's death. While there is still much unknown about NGF, its role in the nervous system is essential, and the discovery of a way to administer it safely could open new possibilities for neurodegenerative disorder treatment.

REFERENCES

- Bohr, T. E.; Shiroor, D. A.; & Adler, C. E. (2021). Planarian stem cells sense the identity of the missing pharynx to launch its targeted regeneration. *eLife*, *10*, e68830. <https://doi.org/10.7554/eLife.68830>
- Capsoni, S.; Giannotta, S.; & Cattaneo, A. (2002). Nerve growth factor and galantamine ameliorate early signs of neurodegeneration in anti-nerve growth factor mice. *Proceedings of the National Academy of Sciences of the United States of America*, *99*(19), 12432–12437.
- Fahnestock, M.; Michalski, B.; Xu, B.; & Coughlin, M. D. (2001). The precursor pro-nerve growth factor is the predominant form of nerve growth factor in brain and is increased in Alzheimer's disease. *Molecular and Cellular Neurosciences*, *18*(2), 210–20.
- Li, A. K.; Koroly, M. J.; Schattenkerk, M. E.; Malt, R. A.; & Young, M. (1980). Nerve growth factor: acceleration of the rate of wound healing in mice. *Proceedings of the National Academy of Sciences*, *77*(7), 4379–4381.
- Lindvall O.; Kokaia Z.; & Martínez-Serrano A. (2004). Stem cell therapy for human neurodegenerative disorders: how to make it work. *Nat Med* *10*, S42–S50. doi:10.1038/nm1064 pmid:15272269
- Lazorik, O. (2019). The effect of caffeine on the regeneration of brown planaria. *Journal of Emerging Investigators*, *2*.
- Kells A. P.; Henry R. A.; & Connor B. (2008). AAV-BDNF mediated attenuation of quinolinic acid induced neuropathology and motor function impairment. *Gene Ther*; *15*, 966–977. doi:10.1038/gt.2008.23 pmid:18323792
- Martínez-Serrano A.; Björklund A. (1996). Protection of the neostriatum against excitotoxic damage by neurotrophin-producing, genetically modified neural stem cells. *J. Neurosci* *16*, 4604–doi:10.1523/JNEUROSCI.16-15-04604.1996 pmid:8764649
- Marx, J. (1990). NGF and Alzheimer's: hopes and fears. *Science*, *247* (4941), 408–410.
- Olson, L. (1993). NGF and the treatment of Alzheimer's disease. *Experimental Neurology*, *124*(1), 5–5.
- Pineda J.R.; Rubio N.; Akerud P.; Urbán N.; Badimon L.; Arenas E.; Alberch J.; Blanco J.; & Canals J.M. (2007). Neuroprotection by GDNF-secreting stem cells in a Huntington's disease model: optical neuroimage tracking of brain-grafted cells. *Gene Ther*, *14*, 118–128. doi:10.1038/sj.gt.3302847 pmid:16943855
- Roberts-Galbraith, R., H.; Brubacher, J. L.; & Newmark, P. A. (2016). A functional genomics screen in planarians reveals regulators of whole-brain regeneration. *Elife*, *5*, e1 7002. <https://doi.org/10.7554/eLife.17002>
- Rubio F.J.; Kokaia Z.; del Arco A.; García-Simón M.I.; Snyder E.Y.; Lindvall O.; Satrustegui J., & Martínez-Serrano A. (1999). BDNF gene transfer to the mammalian brain using CNS derived neural precursors. *Gene Ther*; *6*, 1851–1866. doi:10.1038/sj.gt.3301028 pmid:10602381
- Shomrat T., & Levin M. An automated training paradigm reveals long-term memory in planarians and its persistence through head regeneration. (2013). *J. Exp. Biol.*, *216* (20): 3799–810. doi:10.1242/jeb.087809.
- Takeda, M. (2011). Biomarkers and Alzheimer spectrum. *Psychiatry and Clinical Neurosciences*, *65*(2), 115–20. <https://doi.org/10.1111/j.1440-1819.2011.02197.x>
- The Challenge of Neurodegenerative Diseases*. (n.d.). Harvard Neurodiscovery Center. <https://neurodiscovery.harvard.edu/challenge>

Figure 1

Average Planaria Length After Treatment



Note. In this figure, each day regeneration was measured is shown on the x-axis. The y-axis shows the average length of each treatment on the corresponding day. The error bars show the standard deviation for each concentration. This data was recorded over one week. The asterisks are representative of significant differences between the control and treated group

Table 1

Significant Interactions from Post-hoc Comparison

Day	drug	Day	drug	ptukey	
Day 1	NGF	Day 3	NGF		0.027
Day 1	NGF	Day 5	NGF	< .001	
Day 1	NGF	Day 5	NO	< .001	
Day 1	NGF	Day 7	NGF	< .001	
Day 1	NGF	Day 7	NO	< .001	
Day 1	NO	Day 5	NGF	< .001	
Day 1	NO	Day 7	NGF	< .001	
Day 1	NO	Day 7	NO		0.023
Day 3	NGF	Day 7	NGF		0.033

Note. A Tukey’s post-hoc test was run to find significant interactions as seen in the ANOVA test. The significant interactions are reported in the table. All ptukey values less than 0.05 were reported.



ANNOUNCEMENTS

WINNERS OF THE FALL 2022 FR. FITZGERALD UNDERGRADUATE WRITING CONTEST

Scholarly Research

First – “Administration of Nerve Growth Factor to Enhance Regenerative Growth,”
Meghan Kodsi, Mount St. Mary’s College

Second – “The Saving Power of the Holy Spirit,” Christina Young, Holy Cross College

Honorable Mention - none

Creative Non-Fiction

First – “Soldier Sisters,” Calasandra Spray, Loras College

Second – “Lord of the Dragon Flies,” Issac Johnsen, Saint Francis University

Honorable Mention – “More than my Skin,” Ashley Kenia, King’s College

Short Fiction

First – “Of Summer and Salt Tears,” Claire Doll, Mount St. Mary’s University

Second – none

Honorable Mention – “Wife,” BethAnnie Hartman, Loras College

Critical / Analytical Essay

First – none

Second - none

Honorable Mention – “Domestic Interior,” Coy Pederson, Loras College

Honorable Mention – “The Safety of Assimilation,” Emma Jacobs, Iona University

Poetry

First (tie) – “You are Home,” Sophie Hey, Cardinal Stritch University

First (tie) – “100 Proof” and “Rat Race,” Brandi Naprava, King’s College

Second (tie) – “Demeter’s Fall,” Ellie Coleman, Loras College

Second (tie) – “Snallygaster,” Claire Moberly, Mount St. Mary’s University

Honorable Mention – “Slap in the Face,” Ava Dzurenda, Saint Francis University

WINNERS OF THE FALL 2023 SCHOLARSHIPS FOR UNDERGRADUATE STUDY

Abigail Chandler, Regis College
Liberty Foht, Loras College
Carmele Cataldo, Holy Cross College
Rachel Woomer, King's College
Adam Lasek, Caldwell University
Emily Henderson, Saint Mary's University (MN)
Isabella Stuzynski, Saint Anselm College
Jacqueline VanDolson, University of St. Francis
Sophia D. Cacioppo, Villa Maria College

WINNERS OF THE FALL 2023 FELLOWSHIPS FOR GRADUATE STUDY

Stephan Nelson, Loras College
Olivia Barry, King's College
Lia-Sophie Keller, Salve Regina University
Riley Lavin, Saint Anselm College
Flor De Maria Toumbouras, Regis College
Moesha Ferguson, Caldwell University
Caterina Grande, Niagara University

AN INVITATION TO POTENTIAL CONTRIBUTORS

- The editors of the *Delta Epsilon Sigma Journal* invite contributions to the *Journal* from the readership. Submit manuscripts via email attachment to the editor, Robert Magliola (magliola.robert@gmail.com), with copy to the interim co-editor, Claudia Kovach (ckovach@neumann.edu).
- All attachments should be sent as Microsoft Word documents; no PDFs please. Submissions should be limited to 5000 words at maximum. Submissions to *Delta Epsilon Sigma Journal* are peer reviewed by doctorally-prepared academics or specialists in the pertaining subject matter.
- The journal is open to a wide variety of topics and genres. Particularly welcome are submissions addressing issues of concern to Catholic colleges and universities. The *Delta Epsilon Sigma Journal* editors encourage contributions from all readers, both DES members and non-members.

THE DELTA EPSILON SIGMA NATIONAL UNDERGRADUATE STUDENT AWARD

Delta Epsilon Sigma has a national award to be presented to outstanding student members of the society who are completing their undergraduate program. It provides a means by which a chapter may bring national attention to its most distinguished graduates.

The National Office has a distinctive gold and bronze medallion that it will provide without cost to the recipient's chapter for appropriate presentation. A photo and brief profile of recipients will be published in the *Delta Epsilon Sigma Journal*. Qualifications for the award include the following:

- Membership in Delta Epsilon Sigma.
 - An overall Grade Point Average of 3.9-4.00 on all work completed as an undergraduate.
 - Further evidence of high scholarship:
 - a grade of "A" or with the highest level of distinction on an approved undergraduate thesis or its equivalent in the major field, or
 - scores at the 90th percentile or better on a nationally recognized test (e.g., GRE, LSAT, GMAT, MCAT).
- Endorsements by the chapter advisor, the department chair or mentor, and the chief academic officer.
- Nominations must be made no later than six (6) months after the granting of the undergraduate degree. Include with the nomination a 300-dpi photo and a three-sentence abstract of the student's accomplishments, including the ways the qualifications for the award have been met.
- The calendar deadline for the submission of names of proposed recipients of this award is February 15th. Please send nominations to the Office of the Executive Director: DESNational@neumann.edu.



THE HARRY R. KNIGHT UNDERGRADUATE/GRADUATE PRIZE FOR INTERNATIONAL SERVICE



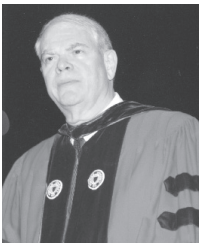
Harry R. Knight

Through the generosity of the Knight family and named for a professor and long-time member of Delta Epsilon Sigma, this award supports a student who wishes to offer service to others outside of the United States by assisting with travel costs up to \$2500.00. The transformative nature of such efforts provides benefits to the student as well as to those served. New skills related to work, language, and culture can enhance resumes and refocus existing career plans. A required reflective report, submitted after the student returns, will be published with photos in the *Delta Epsilon Sigma Journal*.

Requirements: Applicants will submit the following items:

- a three-page proposal, which includes a statement of specific details of potential destination, travel costs, length of stay, assistance goals, and how the applicant's goals correspond with the mission of DES.
- a brief CV with biography including career goals, other completed service, and academic accomplishments.
- an official transcript of coursework.
- a letter of recommendation which addresses the candidate's character, academic work, and potential to contribute to society.
- **All documents must be sent electronically to the National Office (DESNational@Neumann.edu) by March 15th.**

THE J. PATRICK LEE UNDERGRADUATE AWARD FOR SERVICE



J. Patrick Lee

Delta Epsilon Sigma offers the J. Patrick Lee Award for Service. This annual undergraduate competition was established to honor Patrick Lee, who served as National Secretary-Treasurer of Delta Epsilon Sigma with dedication and commitment for over 20 years, and whose leadership transformed the Society. As a tribute to Dr. Lee's praiseworthy ethical character and judgment, awards of \$1000 will be given to student members of Delta Epsilon Sigma who best embody the ideals of Catholic social teaching through their engagement in service. Student winners of the award will also be profiled in the *Delta Epsilon Sigma Journal*.

Guidelines for The J. Patrick Lee Undergraduate Prize for Service:

- In order to participate in the contest, the student should submit a 300-dpi photo (preferably highlighting the candidate's service) and a personal statement of 500-1000 words to his/her chapter advisor. Personal statements should reflect on the service experiences by responding to the following questions: How does your current and past engagement in service reflect the tenets of Catholic social teaching and enrich the local, national, or global community? How will you continue or expand your service in the future? **Students are encouraged to be as specific and thorough as possible within the word limit. Please do not simply repeat information listed on the entry form. Make every effort to explain service involvement instead of just listing service activities.**
- The student should also submit one letter of recommendation written by someone in a professional position who can attest to the type and extent of the service in which the student has been engaged.
- Chapter advisors should select one student from their chapters to nominate for the prize.
- Nominated students must be undergraduates at the time of nomination.
- Nominated students must be members of Delta Epsilon Sigma.
- **Applications must contain a complete official entry form to be considered.** Please visit the DES website, www.deltaepsilonsigma.org, for this form.
- Advisors should submit all entries electronically as MS Word Documents (no PDFs, please) to the National Office at Neumann University, Executive Director: Dr. Claudia Kovach, Neumann University, Division of Arts and Sciences, Aston, PA 19014-1298, (610) 558-5573, FAX (610) 361-5314, Email: DESNational@neumann.edu.
- **The deadline for nominations from advisors is December 1.**

THE FATHER EDWARD FITZGERALD UNDERGRADUATE COMPETITION IN CREATIVE AND SCHOLARLY WRITING



Fr. Fitzgerald

The DES Board is proud to honor Fr. Edward A. Fitzgerald, the founder of Delta Epsilon Sigma. Fr. Fitzgerald conceived the notion of a national association of Catholic scholastic honor societies in 1938 and chaired the Committee of Founders that wrote up DES's Constitution in 1939, thus initiating the national association.

This contest remains open to undergraduates (members or non-members) in an institution that has a chapter of the society. Manuscripts may be submitted in any of six categories:

- Poetry
- Short fiction
- Creative nonfiction/personal essay
- Critical/analytical essay
- Scholarly research in the non-empirical humanities
- Scholarly research in the empirical sciences and in the social sciences

A first prize of five hundred dollars and a second prize of two hundred and fifty dollars in each of the six categories will be awarded. No award may be made in a given category if the committee does not judge any submission to be of sufficient merit.

General Guidelines: Either MLA or APA documentary styles are acceptable (except where they may deviate from the instructions contained here in the *Journal's* "Guidelines"). Publishing restrictions do not permit the Chicago Manual of Style. All prose should show double-spacing, appear in Word format (no PDFs), use 12-point font, and include just one space between words and sentences. Number all pages. Citations should use the "in-text plus Works Cited" format. Relegate all explanatory notes to the submission's back matter as Endnotes (no footnotes!). Do not include headers or footers. The author's name should not appear after the cover page to assure anonymity during judging.

The first phase of the competition is to be conducted by local chapters, each of which is encouraged to sponsor its own contest. A chapter may forward to the national competition only one entry in each category. Preparatory to student revision, editorial comment and advice by a faculty mentor is expected and appropriate, as is correction of grammatical and mechanical (spelling, punctuation) errors, as long as it is the student who--in the final analysis--implements them.

Proofread carefully to reflect the standards of your college or university. Adhere to all guidelines, including conventions of grammar and punctuation. Also follow formal academic requirements of language and style (such as avoiding excessive wordiness and redundancies). The *DES Journal* reflects Catholic values. *Gratuitous use of profanity or vulgarity will not impress the judges and will not merit publication.*

Poetry: Writing in this category should be original poetry, either in verse or prose form. A long poem should be submitted singly; shorter lyrics may be submitted in groups of two or three.

Short Fiction: Writing in this category should be original fiction, such as short stories or stand-alone sections of longer pieces. Fiction should total 1500-5000 words, either in a single work or, in cases of very short pieces, in groups of two or three.

Creative Nonfiction/Personal Essay: Writing in this category should communicate some dimension of the worldview or feelings of the writer. Writing should be true—as affirmed by the writer—but may be creative in structure or form and may make use of character development, dialogue, or other techniques of creative writing. Creative nonfic-

tion pieces or personal essays should total 1500-5000 words, either in a single work or, in cases of very brief pieces, in groups of two or three.

Critical/Analytical Essay: Writing in this category should investigate a text, or a social or scholarly issue, through a critical lens. Examples of this type of writing may include textual interpretation or expository or argumentative essays in which original research is not the primary aim. Essays in this category should total 1500-5000 words. Provide appropriate in-text citations for all direct or indirect (paraphrased) quotations. Integrate brief quotations properly with correct punctuation.

Scholarly Research in the Non-Empirical Humanities: Writing in this category should present primary or secondary research that provides and elucidates some original insight on a social, ethical, cultural, or humanistic question. Emphasis will be paid to the quality, depth, and presentation of the piece, and proper adherence to conventional documentation format (MLA or APA). Such scholarly research should include an abstract (situated at the beginning of the paper). Provide appropriate in-text citations for all direct or indirect (paraphrased) quotations. Avoid block quotations and integrate brief quotations properly with correct punctuation. Follow all requirements for formal academic writing by avoiding casual or conversational language such as contractions or informal vocabulary. Avoid using the first person, overusing verbs of being, and including other examples of wordiness. Papers in this category should total 1500-5000 words.

Scholarly Research in the Empirical Sciences and in the Social Sciences: Scientific writing does not just include writing about science; it shows the technical writing scientists use to communicate their research to others. Predicated on the rigors of scientific inquiry, scientific writing must reflect the same precision as that demanded in the research process. Writing in this category thus demands precision (the precise use of words and phrases), clarity, and economy because the writer is communicating highly technical information to others who might, or might not, be as knowledgeable; they may be from a different discipline; they may, or may not, be a native speaker of the language used. Many journals have international audiences, so precise communication helps prevent misunderstandings and mistranslations in other contexts. Communicating facts, figures, and methods used in research—as well as the description of the results—has to be precise and exact. The research question, hypotheses, methods, analysis, and conclusions must be stated clearly and simply.

This category should present primary research elucidating original results of scientific research. Emphasis will be paid to the writing quality, depth, and presentation of the piece, and proper adherence to the appropriate disciplinary documentation format such as that of the American Psychological Association (APA); American Chemical Society (ACS), used in chemistry and some of the physical sciences; American Institute of Physics (AIP); the American Mathematical Society (AMS); the American Society of Mechanical Engineers (ASME); and the Institute of Electrical and Electronics Engineers (IEEE). Scientific scholarly research should include an abstract (situate it at the beginning of your paper).

Incorporating the stages of the scientific method, the scientific research paper begins with an abstract followed by the introduction, methods, results, conclusions, and acknowledgments. The introduction discusses the issue studied and discloses the hypothesis tested in the experiment. The step-by-step procedure, notable observations, and relevant data collected are all included in methods and results. The discussion section consists of the author's analysis and interpretations of the data. Additionally, the author may choose to discuss any discrepancies with the experiment that could have altered the results. The conclusion summarizes the experiment and will make inferences about the outcomes. The paper will typically end with an acknowledgments section, giving proper attribution to any other contributors besides the main author(s). Keep all graphs, tables, and figures at a minimum, and never include visual materials as a substitute for verbal description and explication. Papers in this category should total 1500-5000 words.

Specific Guidelines for Preparation of All Submissions:

- Prose manuscripts of 1500-5000 words should be typed and sent electronically in 12 point Times New Roman font.
- One space is permitted between words and sentences.
- Include a cover page with title, name, university, and home address.
- The page following the cover (the beginning of the actual text) should contain only the title and no other heading.
- The pages must be numbered, the lines double-spaced, and in Word format (no PDFs, please).
- Scholarly papers should attach an abstract, include primary and/or secondary research, and present some original insight.
- Documentation should follow one of the established scholarly methods.
- Advisors as well as faculty mentors are expected to take an active role in providing additional comments to students.
- **Advisors and faculty mentors should approve and send all entries to the Executive Director of Delta Epsilon Sigma (DESNational@neumann.edu) by December 1.**

Final judging and the announcement of the result will take place no later than May 1st of the following year. Winners will be notified through the office of the local chapter advisor.

THE SISTER BRIGID BRADY, O.P., DELTA EPSILON SIGMA GRADUATE STUDENT AWARD



*Sister Brigid
Brady, O.P., Ph.D.*

Named in honor of Sister Brigid Brady, OP, Ph.D., The DES Graduate Student Award will grant \$1000 to each of up to three (3) graduate student members of DES per year who have shown a strong commitment to graduate study and maintain the Society's ideal of service to others. The award is renewable for an additional year for one awardee during a given year. Sister Brigid served as a National Executive Board Member, Vice President, and past President of the Society, and was a remarkable Religious, educator, and woman. She spent sixty years as a Dominican Sister, forty-three of which she dedicated to teaching at Caldwell University. Sister Brigid challenged and aided her students to excel. A scholar of Medieval Literature, Shakespeare Studies, and the History of the

English Language, Sister Brigid was among the first professors at Caldwell to introduce classroom technology as a way to broaden student learning. A Renaissance woman, Sister Brigid also handmade her own harp and was deeply committed to the Arts. In addition to her service to DES and other societies, Sister Brigid frequently presented and published papers at the Conference on Christianity and Literature, an international society of scholars dedicated to the study of Christian themes in literature.

Requirements: Applicants will submit the following materials:

- a three-page essay, which includes a statement of (a) career goals, (b) academic accomplishments, (c) scholarly activity, and (d) how the applicant's goals correspond with the mission of DES.
- a brief CV with biography (no more than three pages).
- an official transcript of graduate coursework.
- a 1,500-word sample course paper.
- a letter of recommendation which addresses the candidate's academic work and potential.
- **All documents must be sent electronically to the National Office (DESNational@Neumann.edu) by March 15th.**



THE DELTA EPSILON SIGMA FATHER EDWARD FITZGERALD SCHOLARSHIPS AND FELLOWSHIPS

Delta Epsilon Sigma sponsors an annual scholarship and fellowship competition for its members. Junior-year members may apply for one of ten Fitzgerald Scholarships at \$1,200 each, to be applied toward tuition costs for their senior year. Senior-year members may apply for one of ten Fitzgerald Fellowships at \$1,200 each, to be applied toward tuition costs for first-year graduate work. These scholarships and fellowships are named after the founder and first Secretary-Treasurer of DES, Most Rev. Edward A. Fitzgerald of Loras College, Dubuque, Iowa. The awards will be made available on a competitive basis to students who have been initiated into the Society and who have also been nominated by their chapters for these competitions. Applications may be obtained from the website (deltaepsilonsigma.org) or from the Office of the Executive Director (DESNational@neumann.edu). **The deadline for submitting applications for the DES scholarships and fellowships is March 15.**

THE DELTA EPSILON SIGMA DISTINGUISHED LECTURERS PROGRAM

Each year, Delta Epsilon Sigma offers an award of one thousand dollars for a speaker at a major meeting sponsored or co-sponsored by a chapter of Delta Epsilon Sigma or by a Catholic professional society.

The society also offers awards to help subsidize lectures sponsored by local DES chapters. An application for one of these must be filed with the Office of the Executive Director thirty days in advance; the maximum award will be two hundred dollars. The award requires a follow-up report with photos and promotion on the DES Website and in the *DES Journal*.

All applications should be directed to the Executive Director: Dr. Claudia M. Kovach, Neumann University, School of Arts and Sciences, Aston, PA 19014-1298, (608) 558-5573, FAX (610) 361-5314, email: DESNational@neumann.edu.



SYNOPSIS OF THE DELTA EPSILON SIGMA ANNUAL MEETING OF THE EXECUTIVE COMMITTEE 1/4/2023

Claudia Marie Kovach, Ph.D., Executive Director

Valerie Wright, Ph.D., President

Luigi Bradizza, Ph.D., Vice President

Shelly McCallum-Ferguson, Ph.D., Board Member

Carl Procaro-Foley, Ph.D., Board Member

Mary Ann Miller, Ph.D., Board Member

Jonnie Guerra, Ph.D., Board Member at Large

Rev. Anthony Grasso, CSC, Ph.D., Chaplain

Robert Magliola, Ph.D., Editor, DES Journal

Ronald L. Smorada, Ph.D., Assistant to the Executive Director

After Dr. Wright welcomed the members and called the meeting to order, Fr. Grasso opened the meeting with prayer. Dr. Valerie Wright was then installed as President and Dr. Luigi Bradizza as Vice President. The Executive Committee approved the minutes of the January 2022 meeting, and Dr. Kovach reviewed the terms of service. She introduced newly-elected DES Board member Dr. Mary Ann Miller. Dr. Carl Procaro-Foley resigned from the Executive Committee because of his personal change in venue: the Board thanked him heartily for his years of exemplary service.

The 2022 election was robust in electoral participation. Future ballots will continue to be sent through Director's letter and via email. This approach yielded about a 90% return, and donations of about \$3,400 through personal check and PayPal. The goal is to continue to connect with newly inducted members, establishing a relationship in hopes that they will continue their support. Discussion ensued regarding the term length, consecutive term limits, and the nature of roles of Board members. While maintaining the Secretary-Treasurer position, the Board considered the possibility that the same appointee may be charged, in addition, with the responsibility of recruiting new Board members. The President and Vice President are *ex officio* board member positions, elected to terms of three years duration. Board members serve four year terms, and may be allowed three consecutive terms. The appointment as Chaplain shall be annual, and determined by the Executive Board. The current Editor's appointment continues for the duration. An "At-Large" appointment by the Board, as needed, shall not be bound by term limits. Dr. Jonnie Guerra will currently hold this position to assist in special projects. The position of Executive Director requires a three-year review and the Executive Director--with Board approval--may engage an assistant to aid with the Directorship's work. The Board includes a minimum of five members: (Executive Director, President, Vice President,

and two or three other members). Since each Board member identifies with an academic specialty or specialties, three more members may be added to the Board, if such is needed to assure diversity and parity. Likewise, additional members may be added, if needed, for the better support of particular initiatives.

The Financial Report presented by Drs. Kovach and Smorada showed a drop in excess revenues due to decreases in investment income. Journal printing and mailing costs remain high. Donors, the newly inducted, opt-ins, Chapter Moderators, and *Journal* authors continue to receive printed copies. The Board considered a shift in mode to card mailing in order to encourage members to read the *Journal* on-line. An “Alumni Corner” section within the on-line version of the *Journal* was suggested for publishing work submitted by DES Alumni.

The Board suggested a commemorative issue within the *Journal’s* website. A question was posed concerning available campus printing services that might be used to minimize costs. Dr. Magliola’s Report regarding the *DES Journal* noted that PDF submissions will be automatically disqualified, and that submissions must respect the pertaining word limits. Chapter Moderators are to be reminded to enforce strict adherence to paper length and the required Word format. The cover sheet for each submission will highlight these requirements. Drs. Kovach and Smorada determined that the Society retains an effective website editor, and that the Filemaker Database works well. Although a somewhat costly program at \$1100/year, this database’s security, cloud-format, and management tools warrant the expense. A proposal to raise the membership fee to \$65 (from \$55) was approved by majority vote. The proposed budget was also approved. Dr. Smorada shared materials to be sent to target schools – with personal follow-up. Discussion ensued regarding included materials. An estimated 120 schools will be targeted.

The loss of several member institutions because of school closings was considered as well as the mailing plan for new chapters and a simplified renewal for inactive chapters. The outreach (to current member institutions) in relation to the DES National Writing Competition and the Brady Graduate Student Award should expand to the attracting of new members, especially graduate students, and addressing inactive or underactive chapters. Discussion of DES awards focused on the selection process and the determination of winners.

The next meeting will take place in 2024 on January 4 (travel in on the 3rd and out on the 5th) in St. Petersburg, Florida (hotel TBD).



THE DELTA EPSILON SIGMA STORE



Item Description	Price
NEW Grey DES Chapter Polo Shirt*– unisex	\$47.00
NEW Men's Fitted DES Red Chapter T-shirt*	\$23.00
NEW Ladies Fitted DES Red Chapter T-shirt*	\$23.00
NEW Horizontal Certificate Frame with Medallion	\$81.00
DES Gold and Maroon Double Honor Cords	\$12.00
#502 Key - gold kase	\$30.00
#502 Key - 10K yellow gold	\$269.00
#503 Keypin - gold kase	\$31.00
#503 Keypin - 10K yellow gold	\$259.00
#502D Key with 2pt. diamond - 10K yellow gold	\$310.00
#503D Keypin with 2pt. diamond - 10K yellow gold	\$299.00
ML/02S Staggered Lavalier - sterling silver	\$29.00
7.25" Rope Bracelet w/ lavalier - sterling silver	\$67.00
18" Rope Necklace w/ lavalier - sterling silver	\$82.00

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THE DES NATIONAL CATHOLIC SCHOLASTIC HONOR SOCIETY EMBLEM



The emblem of DES contains the motto, the name, the symbols, and the founding date of the society. Delta Epsilon Sigma is an abbreviation constructed from the initial Greek letters of the words in the motto, *Dei Epitattein Sophon*. Drawn from Aristotle and much used by medieval Catholic philosophers, the phrase is taken to mean: “It is the mission of a wise person to put order” into knowledge.

The Society’s Ritual for Induction explains that a wise person is one “who discriminates between the true and the false, who appraises things at their proper worth, and who then can use this knowledge, along with the humility born of it, to go forward to accept the responsibilities and obligations which this ability imposes.”

Thus the three words on the *Journal’s* cover, Wisdom · Leadership · Service, point to the challenges as well as the responsibilities associated with the DES motto. The emblem prominently figures the *Chi Rho* symbol (the first two Greek letters of the word Christ), and the flaming lamp of wisdom shining forth the light of Truth.

DELTA EPSILON SIGMA JOURNAL
Neumann University
Arts and Sciences BACH 305
One Neumann Drive
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