

of a world food bank, or of unrestricted immigration. We must convince them if we wish to save at least some parts of the world from environmental ruin.

### Responding to Reading

1. Hardin presents his problem as one that has no comfortable solution. One alternative, welcoming all who wish to come into the lifeboat, is "complete justice, complete catastrophe" (6); the other, retaining the crucial "safety factor," is both "the only means of our survival" and "morally abhorrent to many people" (8-9). Does Hardin see these two alternatives as ethically and practically unacceptable? Do you? Is it really an either/or situation, or are there some solutions he ignores?
2. Does Hardin's use of the lifeboat metaphor clarify his arguments and present the problem he describes in vivid terms? Or do you find it simplistic, distracting, or irrelevant?
3. In paragraph 2, Hardin asks, "But does everyone on earth have an equal right to an equal share of its resources?" That is, are some people more—or less—deserving than others? How would you answer this question?

### Responding in Writing

Imagine you can take only one additional person into your lifeboat. Which of the following would you choose: a baby, an elderly man who has won the Nobel Peace Prize, a single mother of three young children, a decorated soldier, or a doctor who does life-saving surgery? Explain your choice.

## DOG LAB

Claire McCarthy

1963-

*A graduate of Princeton University and Harvard Medical School, Claire McCarthy did her residency at Boston's Children's Hospital and is now a pediatrician at the Martha Eliot Health Center in the Jamaica Plains neighborhood of Boston. During her medical training, she kept detailed journals, which provided the basis for her books Learning How the Heart Beats: The Making of a Pediatrician (1995) and Everyone's Children: A Pediatrician's Story of an Inner-City Practice (1998). McCarthy has also written for the Boston Globe Magazine. In the following essay, a chapter from Learning How the Heart Beats, McCarthy recalls her reluctance to attend an optional lab lesson in which students studied the cardiovascular system of a sedated living dog, which was then euthanized.*

When I finished college and started medical school, the learning changed fundamentally. Whereas in college I had been learning

mostly for learning's sake, learning in order to know something, in medical school I was learning in order to *do* something, do the thing I wanted to do with my life. It was exhilarating and at the same time a little scary. My study now carried responsibility.

The most important course in the first year besides Anatomy was Physiology, the study of the functions and processes of the human body. It was the most fascinating subject I had ever studied. I found the intricacies of the way the body works endlessly intriguing and ingenious: the way the nervous system is designed to differentiate a sharp touch from a soft one; the way muscles move and work together to throw a ball; the wisdom of the kidneys, which filter the blood and let pass out only waste products and extra fluid, keeping everything else carefully within. It was magical to me that each organ and system worked so beautifully and in perfect concert with the rest of the body.

The importance of Physiology didn't lie just in the fact that it was fascinating, however. The other courses I was taking that semester, like Histology and Biochemistry, were fascinating, too. But because Physiology was the study of how the body actually works, it seemed the most pertinent to becoming a physician. The other courses were more abstract. Physiology was practical, and I felt that my ability to master Physiology would be a measure of my ability to be a doctor.

When the second-year students talked about Physiology, they always mentioned "dog lab." They mentioned it briefly but significantly, sharing knowing looks. I gathered that it involved cutting dogs open and that it was controversial, but that was all I knew. I didn't pursue it, I didn't ask questions. That fall I was living day to day, lecture to lecture, test to test. My life was organized around putting as much information into my brain as possible, and I didn't pay much attention to anything else.

I would get up around six, make coffee, and eat my bowl of cereal while I sat at my desk. There was nowhere else to sit in my dormitory room, and if I was going to sit at my desk, I figured I might as well study, so I always studied as I ate. I had a small refrigerator and a hot plate so that I could fix myself meals. After breakfast it was off to a morning of lectures, back to the room at lunchtime for a yogurt or soup and more studying, then afternoon lectures and labs. Before dinner I usually went for a run or a swim; although it was necessary for my sanity and my health, I always felt guilty that I wasn't studying instead. I ate dinner at my desk or with other medical students at the cafeteria in Beth Israel Hospital. We sat among the doctors, staff, and patients, eating our food quickly. Although we would try to talk about movies, current affairs, or other "nonmedical" topics, sooner or later we usually ended up talking about medicine; it was fast

becoming our whole life. After dinner it was off to the eerie quiet of the library, where I sat surrounded by my textbooks and notes until I got tired or frustrated, which was usually around ten-thirty. Then I'd go back to the dorm, maybe chat with the other students on my floor, maybe watch television, probably study some more, and then fall asleep so that I could start the routine all over again the next morning.

My life had never been so consuming. Sometimes I felt like a true student in the best sense of the word, wonderfully absorbed in learning; other times I felt like an automation. I was probably a combination of the two. It bothered me sometimes that this process of teaching me to take care of people was making me live a very study-centered, self-centered life. However, it didn't seem as though I had a choice.

One day at the beginning of a physiology lecture the instructor announced that we would be having a laboratory exercise to study the cardiovascular system, and that dogs would be used. The room was quickly quiet; this was the infamous "dog lab." The point of the exercise, he explained, was to study the heart and blood vessels *in vivo*<sup>1</sup> to learn the effects of different conditions and chemicals by seeing them rather than just by reading about them. The dogs would be sedated and the changes in their heart rates, respiratory rates, and blood pressure would be monitored with each experiment. As the last part of the exercise the sleeping dogs' chests would be cut open so we could actually watch the hearts and lungs in action, and then the dogs would be killed, humanely. We would be divided up into teams of four, and each team would work with a teaching assistant. Because so many teaching assistants were required, the class would be divided in half, and the lab would be held on two days.

The amphitheater buzzed.

The lab was optional, the instructor told us. We would not be marked off in any way if we chose not to attend. He leaned against the side of the podium and said that the way he saw it there was a spectrum of morality when it came to animal experimentation. The spectrum, he said, went from mice or rats to species like horses or apes, and we had to decide at which species we would draw our lines. He hoped, though, that we would choose to attend. It was an excellent learning opportunity, and he thought we ought to take advantage of it. Then he walked behind the podium and started the day's lecture.

<sup>10</sup> It was all anyone could talk about: should we do dog lab or shouldn't we? We discussed it endlessly.

There were two main camps. One was the "excellent learning opportunity" camp, which insisted that dog lab was the kind of science

<sup>1</sup>Latin phrase for "in the living being." [Eds.]

we came to medical school to do and that learning about the cardiovascular system on a living animal would make it more understandable and would therefore make us better doctors.

Countering them was the “importance of a life” camp. The extreme members of this camp insisted that it was always wrong to murder an animal for experimentation. The more moderate members argued that perhaps animal experimentation was useful in certain kinds of medical research, but that dog lab was purely an exercise for our education and didn’t warrant the killing of a dog. We could learn the material in other ways, they said.

On and on the arguments went, with people saying the same things over and over again in every conceivable way. There was something very important about this decision. Maybe it was because we were just beginning to figure out how to define ourselves as physicians—were we scientists, eager for knowledge, or were we defenders of life? The dog lab seemed to pit one against the other. Maybe it was because we thought that our lives as physicians were going to be filled with ethical decisions, and this was our first since entering medical school. It was very important that we do the right thing, but the right thing seemed variable and unclear.

I was quiet during these discussions. I didn’t want to kill a dog, but I certainly wanted to take advantage of every learning opportunity offered me. And despite the fact that the course instructor had said our grades wouldn’t be affected if we didn’t attend the lab, I wasn’t sure I believed him, and I didn’t want to take any chances. Even if he didn’t incorporate the lab report into our grades, I was worried that there would be some reference to it in the final exam, some sneaky way that he would bring it up. Doing well had become so important that I was afraid to trust anyone; doing well had become more important than anything.

I found myself waiting to see what other people would decide. I<sup>15</sup> was ashamed not to be taking a stand, but I was stuck in a way I’d never been before. I didn’t like the idea of doing the lab; it felt wrong. Yet for some reason I was embarrassed that I felt that way, and the lab seemed so important. The more I thought about it, the more confused I became.

Although initially the students had appeared divided more or less evenly between the camps, as the lab day drew nearer the majority chose to participate. The discussions didn’t stop, but they were fewer and quieter. The issue seemed to become more private.

I was assigned to the second lab day. My indecision was becoming a decision since I hadn’t crossed my name off the list. I can still change my mind, I told myself. I’m not on a team yet, nobody’s counting on me to show up. One of my classmates asked me to join his group. I hedged.

The day before group lists had to be handed in, the course instructor made an announcement. It was brief and almost offhand: he said that if any of us wished to help anesthetize the dogs for the lab, we were welcome to do so. He told us where to go and when to be there for each lab day. I wrote the information down.

Somehow, this was what I needed. I made my decision. I would do the lab, but I would go help anesthetize the dogs first.

20 Helping with the anesthesia, I thought, would be taking full responsibility for what I was doing, something that was very important to me. I was going to *face* what I was doing, see the dogs awake with their tails wagging instead of meeting them asleep and sort of pretending they weren't real. I also thought it might make me feel better to know that the dogs were treated well as they were anesthetized and to be there, helping to do it gently. Maybe in part I thought of it as my penance.

The day of the first lab came. Around five o'clock I went down to the Friday afternoon "happy hour" in the dormitory living room to talk to the students as they came back. They came back singly or in pairs, quiet, looking dazed. They threw down their coats and backpacks and made their way to the beer and soda without talking to anyone. Some, once they had a cup in their hands, seemed to relax and join in conversations; others took their cups and sat alone on the couches. They all looked tired, worn out.

"Well?" I asked several of them. "What was it like?"

Most shrugged and said little. A few said that it was interesting and that they'd learned a lot, but they said it without any enthusiasm. Every one of them said it was hard. I thought I heard someone say that their dog had turned out to be pregnant. Nobody seemed happy.

The morning of my lab was gray and dreary. I overslept, which I hardly ever do. I got dressed quickly and went across the street to the back entrance of the lab building. It was quiet and still and a little dark. The streets were empty except for an occasional cab. I found the open door and went in.

25 There was only one other student waiting there, a blond-haired woman named Elise. I didn't know her well. We had friends in common, but we'd never really talked. She was sweet and soft-spoken; she wore old jeans and plaid flannel shirts and hung out with the activist crowd. She had always intimidated me. I felt as though I weren't political enough when I was around her. I was actually a little surprised that she was doing the lab at all, as many of her friends had chosen not to.

We greeted each other awkwardly, nodding hello and taking our places leaning against the wall. Within a few minutes one of the

teaching assistants came in, said good morning, pulled out some keys, and let us into a room down the hall. Two more teaching assistants followed shortly.

The teaching assistants let the dogs out of cages, and they ran around the room. They were small dogs; I think they were beagles. They seemed happy to be out of their cages, and one of them, white with brown spots, came over to me with his tail wagging. I leaned over to pet him, and he licked my hand, looking up at me eagerly. I stood up again quickly.

The teaching assistant who had let us in, a short man with tousled brown hair and thick glasses, explained that the dogs were to be given intramuscular injections of a sedative that would put them to sleep. During the lab they would be given additional doses intravenously as well as other medications to stop them from feeling pain. We could help, he said, by holding the dogs while they got their injections. Elise and I nodded.

So we held the dogs, and they got their injections. After a few minutes they started to stumble, and we helped them to the floor. I remember that Elise petted one of the dogs as he fell asleep and that she cried. I didn't cry, but I wanted to.

When we were finished, I went back to my room. I sat at my desk, drank my coffee, and read over the lab instructions again. I kept thinking about the dogs running around, about the little white one with the brown spots, and I felt sick. I stared at the instructions without really reading them, looking at my watch every couple of minutes. At five minutes before eight I picked up the papers, put them in my backpack with my books, and left.

The lab was held in a big open room with white walls and lots of windows. The dogs were laid out on separate tables lined up across the room; they were on their backs, tied down. They were all asleep, but some of them moved slightly, and it chilled me.

We walked in slowly and solemnly, putting our coats and backpacks on the rack along the wall and going over to our assigned tables. I started to look for the dog who had licked my hand, but I stopped myself. I didn't want to know where he was.

Our dog was brown and black, with soft floppy ears. His eyes were shut. He looked familiar. We took our places, two on each side of the table, laid out our lab manuals, and began.

The lab took all day. We cut through the dog's skin to find an artery and vein, into which we placed catheters. We injected different drugs and chemicals and watched what happened to the dog's heart rate and blood pressure, carefully recording the results. At the end of the day, when we were done with the experiments, we cut open the dog's chest. We cut through his sternum and pulled open his rib cage. His heart and lungs lay in front of us. The heart was a fist-size mass of

that squeezed itself as it beat, pushing blood out. The lungs were white and solid and glistening under the pleura that covered them. The instructor pointed out different blood vessels, like the aorta and the superior vena cava. He showed us the stellate ganglion, which really did look like a star. I think we used the electrical paddles of a defibrillator and shocked the dog's heart into ventricular fibrillation, watching it shiver like Jell-O in front of us. I think that's how we killed them—or maybe it was with a lethal dose of one of the drugs. I'm not sure. It's something I guess I don't want to remember.

<sup>35</sup> Dan was the anesthesiologist, the person assigned to making sure that the dog stayed asleep throughout the entire procedure. Every once in a while Dan would get caught up in the experiment and the dog would start to stir. I would nudge Dan, and he would quickly give more medication. The dog never actually woke up, but every time he moved even the slightest bit, every time I had to think about him being a real dog who was never going to wag his tail or lick anyone's hand again because of us, I got so upset that I couldn't concentrate. In fact, I had trouble concentrating on the lab in general. I kept staring at the dog.

As soon as we were finished, or maybe a couple of minutes before, I left. I grabbed my coat and backpack and ran down the stairs out into the dusk of the late afternoon. It was drizzling, and the medical school looked brown and gray. I walked quickly toward the street.

I was disappointed in the lab and disappointed in myself for doing it. I knew now that doing the lab was wrong. Maybe not wrong for everyone—it was clearly a complicated and individual choice—but wrong for me. The knowledge I had gained wasn't worth the life of a dog to me. I felt very sad.

The drizzle was becoming rain. I slowed down; even though it was cold, the rain felt good. A couple of people walking past me put up their umbrellas. I let the rain fall on me. I wanted to get wet.

From the moment you enter the field of medicine as a medical student, you have an awareness that you have entered something bigger and more important than you are. Doctors are different from other people, we are told implicitly, if not explicitly. Medicine is a way of life, with its own values and guidelines for daily living. They aren't bad values; they include things like the importance of hard work, the pursuit of knowledge, and the preservation of life—at least human life. There's room for individuality and variation, but that's something I realized later, much later. When I started medical school I felt that not only did I have to learn information and skills, I had to become a certain kind of person, too. It was very important to me to learn to do the thing that a doctor would do in a given situation. Since the course instructor, who represented Harvard Medical School to me,

had recommended that we do the lab, I figured that a doctor would do it. That wasn't the only reason I went ahead with the lab, but it was a big reason.

The rain started to come down harder and felt less pleasant. I walked more quickly, across Longwood Avenue into Vanderbilt Hall. I could hear familiar voices coming from the living room, but I didn't feel like talking to anyone. I ducked into the stairwell.

I got to my room, locked the door behind me, took off my coat, and lay down on my bed. The rain beat against my window. It was the time I usually went running, but the thought of going back out in the rain didn't appeal to me at all. I was suddenly very tired.

As I lay there I thought about the course instructor's discussion of the spectrum of morality and drawing lines. Maybe it's not a matter of deciding which animals I feel comfortable killing, I thought. Maybe it's about drawing different kinds of lines: drawing the lines to define how much of myself I will allow to change. I was proud of being a true student, even if it did mean becoming a little like an automaton. But I still needed to be the person I was before; I needed to be able to make some decisions without worrying about what a doctor would do.

I got up off the bed, opened a can of soup, and put it in a pan on the hot plate to warm. I got some bread and cheese out of the refrigerator, sat down at my desk, and opened my Biochemistry text.

Suddenly I stopped. I closed the text, reached over, and turned on the television, which sat on a little plastic table near the desk. There would be time to study later. I was going to watch television, read a newspaper, and call some friends I hadn't called since starting medical school. It was time to make some changes, some changes back.

## Responding to Reading

1. Summarize the two main schools of thought about whether or not to participate in "dog lab." Do the students really have a choice? Explain.
2. Why did McCarthy decide to help anesthetize the dogs? Does her decision make sense to you?
3. Did McCarthy believe that the knowledge she gained was worth the sacrifice of the dog? Do you agree with her? Do you think her experience in "dog lab" changed her? Do you think it made her a better doctor? Explain.

## Responding in Writing

Do you see a difference in the relative value of the lives of a laboratory animal, an animal in the wild, and a pet? Or do you think the lives of all three kinds of animals have equal value? Explain your beliefs.